Universidade de Aveiro Departamento de Ambiente e Ordenamento
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Indicadores de Sustentabilidade e Governação Local em Portugal

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Tese apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Doutor em Ciências Aplicadas ao Ambiente, realizada sob a orientação científica da Doutora Teresa Fidélis, Professora Auxiliar do Departamento de Ambiente e Ordenamento da Universidade de Aveiro

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Dedico este trabalho aos meus queridos avós

O júri

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Palavras-chave

Indicadores de Sustentabilidade, Governação, Desenvolvimento Sustentável, Portugal, Nível Local, Governo Local

Resumo

Esta tese tem como principal objectivo compreender o papel dos indicadores de sustentabilidade na governação local em Portugal, bem como perceber o seu potencial para transformar práticas institucionais correntes para o desenvolvimento sustentável. As duas últimas décadas têm testemunhado um crescente debate em torno dos indicadores de sustentabilidade e três abordagens específicas da literatura ganharam corpo: a 'técnica', a 'participativa' e a de 'governação'. Esta tese pretende contribuir para a abordagem mais recente e menos explorada da 'governação', através do estudo da realidade local portuguesa. Considera crucial perceber *como* e *em que circunstâncias* e *contextos* o papel destes indicadores pode ser diminuído ou potenciado. Desta forma, pretende avaliar *se* e *de que forma* é que os indicadores de sustentabilidade têm contribuído para alterar e desafiar contextos de governação locais para o desenvolvimento sustentável no nosso país e *se* e *de que forma* estes indicadores têm sido usados. Foram seleccionados e analisados em detalhe sete casos-de-estudo na tentativa de compreender cada um e de construir uma grelha comparativa entre eles utilizando como suporte normativo um conjunto de critérios 'ideais' de boa governação. Assim, a tese identifica os principais obstáculos da construção destes indicadores em Portugal, bem como os seus principais contributos positivos e usos. Enquadra igualmente as suas conclusões no contexto de outras experiências locais Europeias e tenta formular algumas recomendações para reforçar o potencial contributo e a utilização destes indicadores. Através dos casos-de-estudo, foi possível verificar que a sua implementação não tem contribuído para fortalecer o diálogo entre os diferentes níveis de governo, para promover a participação de mais actores nas redes de governação, ou mesmo para melhorar mecanismos de participação e comunicação entre governos, cidadãos e actores locais. De qualquer forma, é importante acrescentar que as experiências mais bem sucedidas permitiram efectivamente mudar as capacidades dos governos locais na coordenação horizontal de políticas sectoriais, nomeadamente através de novas relações entre departamentos, novas rotinas de trabalho, novas culturas de recolha e tratamento de dados locais, novos estímulos de aprendizagem, entre muitas outras. O maior desafio coloca-se agora na transposição destes efeitos positivos para fora da esfera governamental. Esperamos que a tese possa contribuir para que decisores políticos, técnicos, académicos e comunidades locais encarem os indicadores de sustentabilidade como processos de aprendizagem que melhoram a capacidade das cidades enfrentarem os complexos desafios e as incertezas do desenvolvimento sustentável.

Keywords Sustainability Indicators, Governance, Sustainable Development, Portugal, Local Level, Local Government

Abstract

This research aims to understand the role of sustainability indicators in local governance contexts in Portugal and the way they can contribute to challenge current institutional practices for sustainable development. The last two decades have witnessed a growing debate around sustainability indicators, where countless proposals for specific indicators, conceptual frameworks, methodologies, communication methods or participative tools, etc., have been discussed. Three broad approaches to these indicators have sprung: the 'technical', the 'participative' and the 'governance' approaches. This thesis aims to contribute to this recent and less explored 'governance' approach, focusing on Portuguese local experiences. It considers crucial to understand *how* and *in what circumstances* and contexts the role of these indicators can be diminished or enhanced, particularly at the local level. It places the investigation within the scope of institutional analysis and tries to assess *if* and *how* those indicators have been changing or challenging local governance settings in Portugal towards sustainable development and *if* and *how* they have been used in those contexts. Seven case-studies representing the oldest local experiences in Portugal were selected and analysed in detail. We looked for particular and contextual factors in each one, but also aspired to develop a more comprehensive comparative study framed by a normative position towards good governance for sustainable development. The main obstacles to the development of local sustainability indicators in the country are identified, as well as the major outcomes and uses of those processes. It also draws some conclusions about the main implications of the Portuguese case-studies for core values of good governance for sustainable development when comparing them with other European experiences. Finally, it tries to put forward some general recommendations for better institutional arrangements and for more effective outcomes and uses of these indicators. The case-studies have shown that they have not been a significant contribute to strengthen the dialogue between different levels of government, to expand networks or to improve the communication and participation mechanisms between local governments and local citizens and actors. Nevertheless, the most successful experiences demonstrated that sustainability indicators actually challenged and changed local government capacities. The major challenge remains so in the transposition and dissemination of these outcomes to the outside of the local government sphere. We hope that the thesis may create new opportunities for planners, policy-makers, academics and communities to see sustainability indicators through different angles and to challenge the general perception of indicators as mere 'technical' or 'participative' tools.

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ABAE – European Blue Flag Association
APA – Portuguese Environmental Agency
CCRD – Coordination Commissions for Regional Development
DG – Directorate-General
DGE – Directorate-General for the Environment
DPSIR – Driving-Force-Pressure-State-Impact-Response
EC – European Commission
ECI – European Common Indicators
EEA – European Environmental Agency
EF – Ecological Footprint
ENGO – Environmental Non-Governmental Organisation
EU – European Union
FEE – Foundation for Environmental Education
GDP – Gross Domestic Product
GIS – Geographic Information System
IDAD – Instituto do Ambiente e Desenvolvimento da Universidade de Aveiro
ICTs – Information and communication technologies
IISD – International Institute for Sustainable Development
IMS – Integrated Management System
INE – National Statistics Institute
LA21 – Local Agenda 21
LEP – Local Environmental Plan
MSUQLO – Monitoring System of Urban Quality of Life of Oporto
NGO – Non-Governmental Organisation
NSDIS – National Sustainable Development Indicator System
NSSD – National Strategy for Sustainable Development
OECD – Organisation for Economic Co-operation and Development
PSR – Pressure-State-Response
RAMED – Regional Association of Municipalities of the Évora District
SC21 – Strategic Commission 21
SDISO – Sustainable Development Indicator System of Oeiras
SDS – Sustainable Development Strategy
SPU – Studies and Planning Unit
UN – United Nations
UNCSD – United Nations Commission on Sustainable Development
UNDSD – United Nations Division for Sustainable Development
UK – United Kingdom
USQ – Unit for Studies and Quality

CHAPTER 1
INTRODUCTION

If good governance for sustainability leads to good sustainability outcomes, then more attention should be devoted not just to the effects of governance on sustainability indicators, but also to the effects of sustainability indicators on governance (adapted from Focht 2008).

1.1. Introduction

Generally speaking, indicators have been widely employed in a diverse range of circumstances, for innumerable reasons and for thousands of years perhaps. Farmers have long used simple indicators in agriculture (like the weather, soil fertility, etc.) and people employ them in day-to-day life (when eating, driving, doing sports, etc.). Quoting Bossel (1999, p.9): "we live by indicators". Especially from the mid-20th century on, several attempts to develop better indicators and information systems to improve decision-making started to emerge and to be consolidated on several fields of research (Hezri and Dovers 2006), from economic studies to planning, political science or environmental studies, just to name a few. An extension of the indicator approach into sustainable development is everything but surprising and one could even say it was inevitable (Bell and Morse 1999).

This is why we have witnessed a growing and extremely rich debate around sustainability indicators in the last two decades. Throughout their recent history, sustainability indicators have been developed in multiple ways, interpreted through different angles, driven by different rationales, served multiple purposes, taken on multiple functions, objectives and uses, and enclosed several advantages or challenges in paving the way towards sustainable development. They have been at the forefront of many political, academic, and community debates, where innumerable proposals for specific indicators, conceptual frameworks, methodologies, presentation and communication methods, participative tools, etc., have been discussed to structure the process for indicator development.

Furthermore, all around the world, at all territorial levels, and particularly at the local level, hundreds of projects have sought to develop sustainability indicators, aiming to identify and define particular paths of sustainability. Some cases, such as the 'Sustainable Seattle' experience, in the United States, have crossed the world and have disseminated all over the debates on sustainability indicators targeting the local level. The growing place for local sustainability indicators, in practice and in theory, has helped to frame the initial interest for this research. Are sustainability indicators contributing to improve the capability of cities to deal with the complexities of sustainable development? How is the development and use of local sustainability indicators taking place in Portugal? And how can the development and use of sustainability indicators challenge, in practice and in theory, governance conditions towards sustainable development? Swimming in such broad considerations, it became clear that one needs to understand the theoretical, empirical and normative implications of the meaning of governance, governance for sustainable development and, particularly local governance, to better understand the role of sustainability indicators in local contexts. And this is this research starting point.

1.2. Governance for Sustainable Development and Sustainability Indicators

It is not new that the concept of sustainable development faces, in practice, formidable conceptual, methodological, bureaucratic, interorganizational, intergovernmental, political and cultural obstacles (Paehlke 2004). It is a matter of intense dispute just like the question of whether it can actually deliver some, most, or any of its 'promises' (Dryzek 2005). Equally debated is the question of whether societies and/or individuals are more able to act towards it or according to it (sustainability) than actually becoming it (sustainable). Nevertheless, it is widely accepted that the meaning of sustainable development is, explicitly or implicitly, a product of the social and political ideologies of a certain time and space (it is socially constructed) and therefore, a product of power relations and governance processes of a specific context. As Williers (cited in Chatterton and Style 2001, p.441) puts it:

> *"As a term, it (sustainable development) is something of a chameleon, and as such it becomes a powerful tool in the hands of those who have the financial and political power and the media connections to manipulate and insert their definitions of it into mainstream thought."*

Nevertheless, Bell and Morse (2003) write that a well-defined concept is a rare luxury and Dryzek explores this perspective considering sustainable development as contested as other concepts, such as democracy:

> *"It is not unusual for important concepts to be contested politically. Think, for example, of the word 'democracy', which has at least as many meanings and definitions as does sustainable development (…) Part of what makes democracy interesting is this very contestation over its essence* (…)" (Dryzek 2005, p.147).

An attractive point of view is that sustainable development mostly emphasises the diversity of paths for societal transformation, depending on the particular cultural and political, as well as ecological starting points (Becker and Jahn 1999). It can be seen as either a discourse, a movement, a normative idea, a recognized principle of contemporary international law[1], a constitutional and legal principle[2], a political agreement, a policy, a pragmatic goal, a dream, a vision, a theory, a strategy, empty rhetoric, a 'never ending' process, or a 'meta fix' (Mineur 2007, Jordan 2008). Continuing Dryzek's argument, sustainability, like democracy, is mainly about 'social learning', relating exploratory and unpredictable approaches to its 'pursuit' (Dryzek 2005). This is why an important part of the literature places at the very heart of the sustainability discourse the need to rethink governance arrangements. The 'messiness' (Donatella Meadows cited in Jordan 2008) or 'differentness' of sustainable development (Lafferty 2004) puts *governance* at the centre of the debate. The more policy-focused disputes call for new policies and new modes of governance to operationalize this demanding, comprehensive, and challenging meaning of sustainable development.

[1] See, for instance, the opinion of the Judge Christopher Gregory WEERAMANTRY regarding the Gabcíkovo-Nagymaros Case in 1994 (Hungary/Slovakia) at http://www.unescap.org/drpad/vc/document/compendium/int9.htm

[2] See, for instance, the discussion in Gomes Canotilho (2001) or in Bosselmann (2010). Particularly Klaus Bosselman (2008) analyses the relationship between sustainable development and universal principles applied in domestic and international law in his book *Principle of Sustainability: Transforming Law and Governance*. He particularly argues for the recognition of sustainability as a legal principle which could be applied in the entire legal system rather than just environmental law or domestic law.

Thus, the need for operationalization or implementation of even if a vague mission statement, a pragmatic target or a normative idea at different territorial levels requires a critical assessment of what needs to be done, by whom, where, when and for how long, as well as for a need to assess progress towards the desired change (Bell and Morse 2003). According to Davies *et al.* (cited in Williams 2006, p.255), evaluation and evidence-based practice, within such contexts, are extremely challenging, but they are imperative. It is not surprising that sustainability indicators are seen here as core elements that provide crucial information about the questions and needs that linger on the contested goals, policies and strategies of sustainable development, even if those indicators are as diverse and contested as the concept of sustainable development itself.

It is not possible to accurately 'measure' and 'quantify' sustainability, but indicators can play a role in framing the meaning of sustainable development in certain contexts and in challenging particular governance settings towards sustainable development. This thesis aims to contribute to a better understanding of *how*, *why* and *in what circumstances* sustainability indicators can be important steering mechanisms, while exploring their role in the local Portuguese reality.

1.3. Local Sustainability Indicators Through Different Angles

It is important to start with a clarification of the meaning of sustainability indicators. The concept of 'sustainability indicators' includes all types of indicators that aim to bring together different themes and areas of concern regarding social, environmental, economic and territorial development. We use the terms 'sustainability indicators', 'indicator system' and 'indicator set' interchangeably throughout this thesis, which mean the group of sustainability indicators considered at a particular context.

As it was mentioned before, the role of sustainability indicators for sustainable development has been widely debated for nearly two decades now in many scientific, academic and political forums. Diverse approaches have therefore sprung and distinct perspectives on their role have matured. The literature review allows the identification of three broad approaches to sustainability indicators: the 'technical', the 'participative' and the 'governance' approach. This investigation focuses particularly on one of them (Moreno Pires and Fidélis 2007), although never it intends to separate the perspectives as totally independent bodies of literature and practice.

Traditionally, sustainability indicators have been generally categorised in two opposing groups: the 'technical' or 'expert-oriented' approach and the 'participative' or 'citizen-oriented' approach (see this categorisation in Bell and Morse 2001 or PASTILLE 2002, for instance). More recently, convergence between these two categorizations, in practice and in theory, has been argued by several researchers (see for example Reed *et al.* 2005, 2006, MacAlpine and Birnie 2005, Rametsteiner *et al.* 2009), who account for the need to consider a new division in the literature that explores more deeply notions of governance. Following the argument put forward by Holman (2009), it is therefore possible to consider a third broad typology – what she calls 'connecting the dots' –, that goes further in looking at the outcomes of sustainability indicators projects on governance contexts: the 'governance' approach.

Several authors within the 'technical' approach (e.g. Hammond *et al.* 1995, Gallopin 1997, Bossel 1999 and 2000, Jesinghaus 1999, Schlossberg and Zimmerman 2003, Giovannini and Linster

2005, Niemeijer and de Groot 2008, Tasser *et al.* 2008, Singh *et al.* 2009, among many others) agree that today sustainability indicators are not only necessary but indispensable instruments in almost every area of national, regional and local development, because they are supposed to facilitate the collection of information for planning, decision-making, implementation and evaluation of sustainable development policies, among many other functions (see in detail Chapter 3). They try to achieve scientific relevance and to devise 'ideal' indicators that are able to conceptualize and measure sustainable development and challenge its complexity. Several proposals for technical progress, statistical innovation, improved measurement tools and simplifications, better presentation and communication methods or stronger conceptual frameworks are some of the most common issues debated in this literature (Holman 2009). The aforementioned authors assume that information from those indicators will "naturally facilitate and feed policy-making" by "virtue of their scientific validity", and therefore envisage "a linear input-driven policy process" (Holman 2009, p. 368). They therefore do not aim to or "cannot explain the inherent complexities of modern governing frameworks" (ibid.).

As a critique to the 'technical' approach, several questions started to emerge: have sustainability indicators been so helpful in practice as this approach assumes? Are they being used by policy-makers at all? Do they effectively change policies? Do they reflect the conflicts around different goals and policies? Do they help to reinforce capabilities to deal with the complexities of sustainable development? Several other authors agree that sustainability indicators do not readily and automatically have an impact on decision-making nor result in major concrete policy changes. A well defined indicator set, by itself, does not necessarily guarantee that there is action and change towards sustainable development (see Pinfield 1996, Bell and Morse 2003, MacAlpine and Birnie 2005, Reed *et al.* 2005, 2006, Fraser *et al.* 2006, just to name a few). They can remain "technically elegant images in journals and reports of what a few individuals want as sustainable development" (Bell and Morse 2003, p.28).

> *"Projects geared to generating sustainability indicators tend to become myopically focused on technical issues (what indicators to use, how many, how to aggregate, etc.) rather than really consider usage to bring about change. The result is a substantial literature that deals with methodological issues, but with little to say on how, or even if, the indicators were applied to help improve the quality of people's lives. The assumption is that they do, but where is the proof?"* (Bell and Morse 2003, p.55).

The 'participative' approach considers the impacts of sustainability indicators at the community level, mainly at the local level. It tries to investigate the ability of sustainability indicators to produce 'soft' impacts related to intangible or conceptual outcomes (Holman 2009). Authors stress that indicators can be an effective mechanism for understanding people's values, needs, concerns, and expectations, a tool for community participation and empowerment and for opening new opportunities to learn about sustainable development and gain support for collective desired actions (Kline 2000, Gahin *et al.* 2003). They argue for the usefulness and benefits of building participative processes towards the development of sustainability indicators and explore frameworks to structure and guide stakeholder discussion in a more effective way. Some arguments have also been put forward for the convergence of both 'technical' and 'participative' approaches to sustainability indicators and to address 'cross-fertilization' of ideas (Reed *et al.* 2005, 2006). Nevertheless, Holman (2009) argues that both approaches miss an explicit and direct link to the effects of indicators on more comprehensive governing arrangements at the local level.

The 'participative' approach on indicators does not "explicitly discuss the role that indicators can play in network integration (…) across spatial scales and policy sector (...), lacking a real engagement with notions of governance and the policy process" (Holman 2009, p.370).

As such, a third perspective emerged: the 'governance' approach (PASTILLE 2002, Gudmundsson 2003, Morel Journel *et al.* 2003, Astleithner *et al.* 2004, Hezri 2004, Hezri and Dovers 2006, Rosenström 2006, Terry 2008, Yli-Viikari 2009, among others). It goes further into detail and incorporates notions of governance in the study of the effects of sustainability indicators. This approach seeks to understand and explain the experimental role of sustainability indicators in the relationships between local governments and communities, in the dialogue between different governmental levels, in shaping new networks, new institutional arrangements or new communication channels that steer policy integration horizontally and vertically and frame sustainability debates (Holman 2009). Within the scope of this 'governance' perspective, this thesis tries to understand and explain the different challenges of developing local sustainability indicators, the way they provoke change in existing local institutional arrangements[3] and how these institutional frames limit or facilitate the use of indicators.

Drawing from the conclusions of Hezri and Dovers (2006, p.88), this work takes on as a starting point that sustainability indicators may "represent an important experiment in governance, beyond a mere technical fix or improvement in measurement protocols". They are considered as appealing steering processes for governance for sustainable development, particularly at the local level, but it is important to understand how and in what circumstances and contexts their role can be diminished or enhanced.

1.4. Aims, Exploratory Questions and Research Methodology

In order to provide solid thinking about the usefulness of local sustainability indicators for governance for sustainable development, sustainability indicators should not be taken on only as tools to be applied independently in policies that will work by themselves, and neither should they be evaluated solely on the basis of their 'technical' quality or 'participative' expression. They should be assessed through the effects they have on local governance practices. If one wishes to be able to evaluate their role to change current developmental models, one needs to consider them as processes: processes within dynamic and ever-changing governance contexts. Therefore, this study takes on the more recent 'governance' approach mentioned before and it intends to add some critical considerations, while exploring the Portuguese context. As a starting point it is, therefore, assumed that one cannot operate sustainability indicators separately from the circumstances in which they are applied (Bressers 2004). In the words of Bressers "what works, where, when and how – particularly in the highly complex policy realm of sustainable development – is highly dependent on the context" (Bressers 2004, p.311). This is why we intend to place the process of developing sustainability indicators within the frame of institutional analysis.

Some experiences in Portugal regarding the development of sustainability indicators have been depicting interesting changes in governance, mainly at the national and regional levels (see Coelho *et al.* 2006, Ramos 2007 or Mascarenhas *et al.* 2010). Nevertheless, the lack of knowledge about *if*

[3] We understand *institutional arrangements* not as the whole set of institutions in a certain context but in a narrower perspective as the set of rules that govern the actions around the work with sustainability indicators.

and *how* sustainability indicators have been applied at the local level is quite striking, as well as the impact that such experiences are having in institutional practices. Empirical and comparative research was found necessary to evaluate, as stated by Flyvbjerg (2001), where we are and where we want to go, while trying to explain the role of sustainability indicators in Portuguese local contexts. Thus, the main goals of this work are:

(1) To link disperse pieces of literature into a coherent theoretical argument that places sustainability indicators at the centre, in order to create conditions to understand the theoretical and contextual knowledge of the role of sustainability indicators for better institutional arrangements for sustainable development.

(2) To review different local experiences with sustainability indicators in Europe in order to learn from possible obstacles, advantages and outcomes of those indicators within particular contexts of governance for sustainable development.

(3) To understand the room for manoeuvre of sustainability indicators to contribute to change or challenge local governance contexts over time in Portugal – their limitations and capabilities –, as well as the relationships between indicators' use and their effects on governance settings.

(4) To reflect on what the Portuguese local reality regarding the implementation of sustainability indicators can add to the innumerable experiences around Europe, and on how close or distant this reality is from normative goals of 'good' governance for sustainable development.

(5) To shed some light or create new opportunities for planners, policy-makers, academics and communities to see sustainability indicators through different angles and perspectives and to challenge the general view of indicators as mere 'technical' or 'participative' tools.

By understanding the weaknesses of the broad applicability of institutional analysis, it was useful to frame and limit our research questions when developing the empirical study regarding Portuguese local contexts. As such, we have tried to concentrate on two main operational questions when exploring the case-studies:

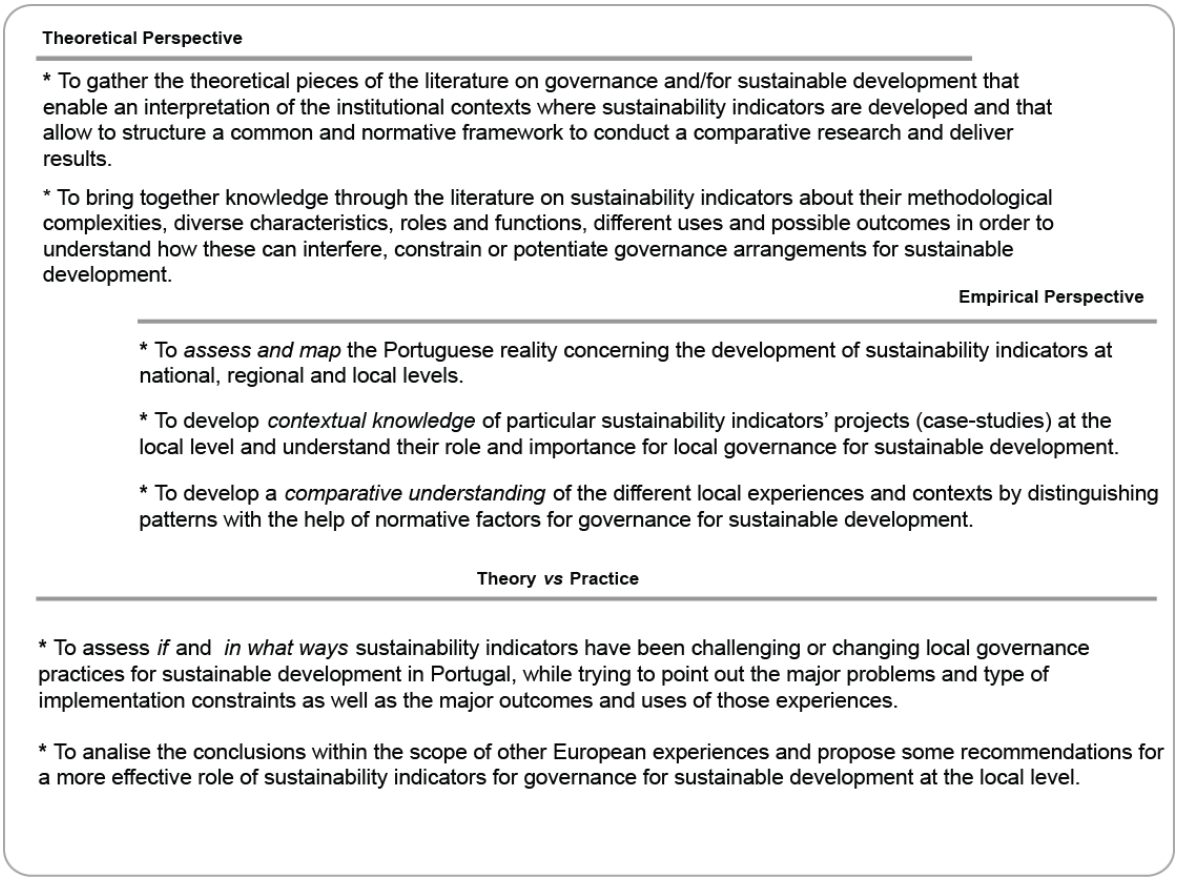
(1) Do indicators challenge or change local governance practices for sustainable development? If so, in what ways?

(2) Are indicators actually used? If so, in what ways?

These questions will be explored based on seven local case-studies in Portugal, while taking into consideration their particular and contextual conditions. It aims to understand the more general administrative contexts and driving force(s) behind the impetus to develop such indicators; the main features of the indicator set; the specific institutional arrangements and main actors involved in the process of developing the indicators (the role of experts, policy-makers, officers and other actors involved; their norms, values, routines and everyday working practices and the way they interact); the way those actors interpret the importance of the set for local governance and the way they use it. We also intend to develop a more general comparative approach of the seven case-studies framed by a normative position towards better governance for sustainable development.

All the steps and methodological questions regarding the empirical research around the case-studies are explained in detail in Chapter 5, which aims to serve as a bridge between the theoretical and normative frames and the practical experiences. In this introductory Chapter, a general explanation of the methodological construction of the thesis is outlined in Figure 1.1 to summarize how this investigation was organized and structured.

Figure 1.1 - **Methodological structure of the research**



1.5. Structure of the Thesis

The thesis is structured in eight Chapters. In this first introductory Chapter we incorporated the more general debate around sustainable development and governance and the role that different authors place on sustainability indicators, in order to articulate with the aims, methodology and research questions addressed in the thesis. Chapter 2 resumes a review of the literature on governance and/for sustainable development to frame the theoretical perspectives on such challenging term(s). Our governance and institutional approach to the role of indicators in local contexts justifies the need to first build on what is implicit, theoretically, empirically and normatively, around the concept of governance for sustainable development and to draw from different interpretive lenses of institutional analysis. Chapter 2 aims as well to define and link the most important conceptual issues that will be used when exploring the empirical data of the Portuguese case-studies. Chapter 3 explores the state of the art regarding sustainability indicators over the last

two decades, ranging from global to national levels. The aim is to explore the extensive literature on sustainability indicators and focus on the types, functions, characteristics, and methodological complexities of those indicators, as these are crucial issues regardless of the approach. It is intended to capture the most important aspects of local-global interplays, of trade-offs between 'technical' and 'participative' approaches to indicators, as well as possible outcomes or uses for sustainability indicators. Chapter 4 then moves on to an overview of some local European projects with sustainability indicators and their effects on governance, bringing into the discussion key obstacles and challenges reported in the literature. It also presents an introductory analysis of the Portuguese context, starting with the consideration of national and regional projects with sustainability indicators and then providing brief insights into the characteristics of local governance for sustainable development. Further considerations are directed to background information gathered to map the development of local sustainability indicators in the country. Chapter 5 is purposely placed in the middle of the structure of the thesis to serve as a bridge between theory and practice and to explain how the case-study research was conducted. This Chapter is crucial to justify the analytical framework used to support the research on the case-studies, since qualitative researchers are often struggling to defend their findings as they cannot be generalized in a statistical sense. Doing qualitative research implies a transparent and clear outline of the methods and techniques used to gather information. Chapter 6 concentrates on the essence of this research and explores the empirical material of the chosen seven local systems, according to the same analytical structure. Afterwards in Chapter 7, an attempt is made to compare all the experiences, to start conceiving some answers to the two main operational research questions according to an 'ideal' typology of criteria. Finally, Chapter 8 summarizes the conclusions of five years of research and emphasizes the major contributions of the theoretical and empirical findings, as well as presents a few recommendations to boost further research and usage of sustainability indicators.

CHAPTER 2
GOVERNANCE FOR SUSTAINABLE DEVELOPMENT

"(…) Changes in the processes of local politics and administration can usefully be conceptualized as a continuum moving from government to governance with a clear assumption that any movement along this continuum towards governance is both progressive and supportive of sustainability" (Evans et al. 2006, p.850)

2.1. Introduction

Inspired by the work of Flyvbjerg and his argument of phronetic social science we attempt in this Chapter to explore some theoretical, empirical and normative issues important for this research. For him, "the goal of the phronetic approach becomes one of contributing to society's capacity for value-rational deliberation and action" (2001, p.167). This approach, he argues, aims to "(…) contribute to society's practical rationality in elucidating where we are, where we want to go, and what is desirable according to diverse sets of values and interests". Without pretending to consider our research within phronetic-like social investigation, the aim of this work is to contribute to the understanding of where we are and where we want to go regarding the implementation of local sustainability indicators in Portugal, trying to explain the role of these indicators in local contexts. Flyvbjerg's work and arguments speak in favor for our interest in a research that aims to deeply confront theory with practice, and practical struggles with theoretical universals. This is why this Chapter aims to put into evidence different theoretical concepts, terms and values, along with more empirical and normative aspects of governance for sustainable development, to support the practical investigation undertaken in the Portuguese context.

As demonstrated in Chapter 1, there are a great variety of approaches that could provide different angles or different insights on the role of sustainability indicators in local governance contexts. Rydin (2006) explains that, in general, there has been a recent rapid increase of attention devoted to institutionalism, canalising interest to the institutional arrangements supporting various aspects of our economic, political and social lives. This has also been reflected in emerging literature which focuses on how local sustainability indicators impact on governance arrangements throughout institutional approaches. The works of PASTILLE (2002), Astleithner *et al.* (2003a, 2004), Hezri and Dovers (2006) or Mineur (2007) have underlined the need to place indicators in their governance context and approach this issue according to an institutional perspective. They have inspired some theoretical implications of this work that will be explored further on. Considering the need to recognize indicators in their specific governance context, the starting point was the literature on governance and/for sustainable development and also the literature specifically devoted to sustainability indicators, which will be analysed in the next Chapter.

Accordingly, we will discuss the understanding of what the concept of *governance* entails for the challenge of sustainable development. Because the vast majority of the literature on governance is rooted in the field of political science - where this concept has been vigorously debated over the last years -, a short review of this literature is necessary in order to sketch some of the main analytical differences and features of the concept, as well as its core values. For scholars of political science, analysing governance is noteworthy precisely because it focuses not only on the

interaction between state bureaucracy, markets, and networks, but also on their consequences for government legitimacy. In addition, it seeks to identify the intended and unintended consequences of this interaction and the conditions under which one solution may be preferable to another (Rhodes 2003). This general academic backdrop will provide a perspective on the challenge of adjusting governance to sustainable development specificities. Even when there is an agreement in the literature that current governance institutions and practices must be reformed if sustainable outcomes are to be achieved, the way it must be carried out vary immensely (Focht 2008).

Therefore, the first part of the Chapter starts with an overview of diverse perceptions on the *notion of governance*, trying to elucidate what the concept means for sustainable development. Then, a few *expressions* used in the governance discourse by political scientists, that offer useful conceptual insights, are presented in order to justify the usage of some throughout this thesis. A third point is dedicated to explore the analytical differentiation of the meaning of governance in the different subfields of political science, providing an interesting clarification of the *main approaches* of governance for sustainable development at different scales and dimensions. A fourth and crucial point tries to see the tension between *core values* of governance and their implications for sustainable development, and particularly for the processes surrounding the development of local sustainability indicators.

In the second part, an important review of the recurrent analytical approaches, present throughout the discussion around institutions and the way they are debated and analysed, tries to put into perspective their main features and assumptions and possible implications for the understanding of the role of sustainability indicators.

The third part of this Chapter resets the discussion within the scope of local contexts. It focuses on more normative factors and conditions proposed by the related literature that reinforce local governance processes for sustainable development. Finally, a last part summarizes the main remarks of this Chapter.

2.2. Understanding Governance for Sustainable Development

2.2.1. The Concept of Governance and the Challenges of Sustainable Development

If the literature on sustainable development is considerable, the literature regarding governance theory is not less extensive and widespread. Some authors go further to admit that ‘sustainable development’ and ‘governance’ together may represent two of the most contested expressions in the entire social sciences (see for instance Jordan 2008). The two have in common the context of the 1980s when the sustainable development discourse made its first steps and when the concept of governance re-emerged with a different meaning of its original definition.

Turning away from the notion of governance in economic analysis (and its impact on corporations), the vast majority of the literature on governance is rooted in the field of political science and it basically explores, theoretically and empirically, the boundaries of state activities, seeking to widen a more diverse view of state powers and how they are exercised. The concept of governance was traditionally related to the activities of governments and how elected politicians exercised power, but the re-emergence of the concept expanded it to mean something broader than government.

Some governance theorists identify governance more closely with government while some others consider it more distant to what governments do. However, it is crucial to stress that governance does not take place without government. As Rhodes puts it: "the state has been hollowed out from above (e.g. international interdependence), from below (by marketisation and networks) and sideways (by agencies)" (Rhodes 2003, p.69), but it still has a fundamental role. According to Kooiman (2003), the 'why' of modern governance, and the need for new modes of governance, can be best explained by an awareness that governments are not the only actors addressing current major societal issues. He also acknowledges that governing arrangements differ from global to local and from sector to sector. This is particularly true for environmental issues and sustainable policies and has justified other more normative reviews of the concept of governance, in search for more prescriptive formulations of 'good' governance.

The 'linguistic shift' in the use of the concept of governance over the past decades appears as a response to changes in the role of the state and in political practices, given the increasing globalisation, the increasing participation of non-state actors in decision-making at various territorial levels or the increasing number of overlapping networks that create several difficulties in the identification of distinct territorial levels of decision-making (Hirst 2000, in Kjaer 2004; Bache and Flinders 2004).

Rhodes (2003) adds that the use of market mechanisms in the delivery of public services or the introduction of private sector management tools in the public sector are other fundamental developments that have influenced the change in governmental activities. While aiming at strengthening competition, boosting innovation, increasing choice and at the same time reinforcing the public economy, efficiency and effectiveness, these changes have led to the separation of policy-making from management (Rhodes 2003) and to the New Public Management movement. Finally, besides the influence of the private sector 'way of thinking' in public affairs, Kooiman expresses that "responses to diverse, dynamic and complex societal issues have been requiring different approaches involving previously uninvolved partners, looking not only at the market, as it seems to have been an almost universal response in recent years, but also looking at 'civil society' as serious governing partners" (Kooiman 2003, p.3).

The question of how to define and understand governance seems to be as challenging as defining and understanding sustainable development. Is there a widespread meaning of governance or several different concepts? The literature points out towards a diversity of definitions, rejecting a single version of it. The definitions of Pierre, Stoker and Jessop are only but some examples of this array:

> *"In much of the public and political debate, governance refers to sustaining coordination and coherence among a wide variety of actors with different purposes and objectives such as political actors and institutions, corporate interests, civil society, and transnational organisations"* (Pierre 2000, p.4)

> "*Governance involves working across boundaries within the public sector or between the public sector and private or voluntary sectors. It focuses attention on a set of actors that are drawn from but also beyond the formal institutions of government. A key concern is processes of networking and partnership"* (Stoker 2000, p.93)

> *"Governance is the complex art of steering multiple agencies, institutions and systems which are both operationally autonomous from one another and structurally coupled through various forms of reciprocal interdependence"* (Jessop in Rhodes 2003, p.59).

Hirst puts it in another way, identifying 'negotiated social governance' with the new practices of coordinating activities – through networks, partnerships, and deliberative forums – that have grown up on the ruins of the more centralised and hierarchical corporatist representation of the period up to the 1970s (Rhodes 2003).

All the different definitions and positions share, however, a broad institutional background. To some extent, they all grow out of a focus on institutions and institutional change and share common problems that occur with a governance approach related to issues of democracy and accountability (Kjaer 2004). This is why institutional analysis has become central to the understanding of governance settings.

The shift from government to governance points towards the very essence of governance for sustainable development. According to Lafferty (2004), the 'differentness' of sustainable development has been challenging greatly this shift, adding much more problems and complexities to it. He goes on explaining that it calls for stronger integration of core values and principles of sustainable development, horizontally and vertically, within governments (with high demands for coordination), and for effective ways to involve and mobilise civil society (challenging the nature of democratic accountability) into the formulation and implementation of sectoral policies (in overlapping networks). Thus, to conclude this part and for the purpose of this work, *governance for sustainable development* is understood as the set of institutionalized patterns (principles, norms, practices, mechanisms, formal or informal) for interpreting and pursuing sustainable development policies and goals (Bomberg 2004).

2.2.2. New Impetus for Old Expressions

Throughout the related literature one can find that the debate on governance has brought a new impetus for words like *hollowing out, steering* and *networks* (among others), as it was mentioned before. These renewed meanings can provide good insights for the present discussion.

Looking up in the English dictionary, the verb to *hollow out* is defined as to 'remove the interior of' or to 'remove the centre from'. In the governance approach it stands for the loss of capacity of a centralised state to govern alone. For Rhodes, the hollowing-out thesis addresses the proposition that "institutional differentiation and pluralization is common, creating multiple challenges to the capacity of core executives to steer" (Rhodes 2000, p.72). Understanding different institutional settings is therefore crucial for reflexive thinking about different ways of steering.

The critical meaning of *steering* in the context of governance, as given by Stoker (2000, p.98), recognizes that "government cannot impose its policy but must rather negotiate both policy and implementation with partners in public, private and voluntary sectors". To steer means to 'guide', to 'direct the course of'. The advocates of steering suggest that it involves government learning in order to establish a framework for effective collective action (Stoker 2000). So, the capability to steer is an important characteristic of governance systems which settles the room for manoeuvre

for change and determines whether or not they can work effectively. The issue of what approaches to use to steer governance processes becomes a central one, and therefore the role of sustainability indicators becomes an interesting case to study.

Finally, *networks* are for many authors the analytical heart of the notion of governance. To a certain extent, "all scholars study relations of reciprocity, whether inside networks or across networks: these networks could be intergovernmental or inter-organizational (see Rhodes); they could be transnational (see Rosenau) or they could be networks of trust and reciprocity crossing the state-society divide (see Hyden)" (Kjaer 2004, p.4). Generally, networks can be understood as "informal rules governing interactions between the state and organized interests" (Blom-Hansen 1997, p.676). It is important to be aware that the governance literature does not claim networks are new, only that they have multiplied:

> *"Fragmentation not only created new networks but it also increased the membership of existing networks, incorporating both private and voluntary sectors"* (Rhodes 2003, p.66).

Networks are usually viewed in a constructive manner, because they have much potential to increase policy-making efficiency as they can generate more knowledge and resources and ease implementation of policies immensely. On the other hand, there is more fragmentation, less control, and risk of exclusion (Kjaer 2004). According to Rhodes "just as there are limits to central command, there are also limits to independent action by networks". This is why this "decentralized negotiating style, which trades off control for agreement", needs to operate within a defined framework: policy guidance; systematic review of its work; mobilization of resources and skills across sectors; regulation of networks and their members; provision of advice and assistance, etc" (Rhodes 2003, p.70). Adshead (2002) stresses that network analysis – representing the relations between actors in a given policy area – can be used to typify the policy process along a number of dimensions, such as: the number of participants and the type of interests they represent; the relations between actors in terms of frequency, quality and continuity of their interactions; the distribution of resources amongst them – in terms of finance, status, access to information or authority; and finally, the distribution of power or policy authority between key policy actors and institutions.

The characteristics of the *networks*, the magnitude of the *steering mechanisms* and the forms of *hollowing out* are very specific and tougher for sustainable development policies than for other policy areas. Lafferty (2004) points to some normative characteristics of sustainable development that emphasise those aspects, since it can be considered as: (i) an exogenous – 'outside-in' – programme in the sense that it results from international pressure and agreements (such as the *Rio Declaration*, the *International Convention on Climate Change*, etc.); (ii) a trans-border programme going beyond any territorial border; (iii) a transformative programme involving a 'decoupling' of economic and social 'pressures' on natural life-support systems; and, (iv) a holistic, interdependent and contingent long-term programme. Sustainability indicators are therefore analysed bearing this magnitude of aspects.

A deeper analysis of the concept of governance is the goal of the next section. Within the field of political science the concept of governance is discussed in different ways, according to the subfield

it concerns. A summary of the main ideas of this discussion with special attention to issues that could have an influence on the challenge of sustainable development, is thus highly relevant.

2.2.3. Analytical Differences of the Meaning of Governance

The development of governance as an analytical framework in different subfields of political science is born of a growing specialisation in this field. Not intending to be exhaustive, the aim of this part is to underline the different approaches in governance theory and briefly confront them with the specificity of governance for sustainable development in order to retain particular contributions. This is particularly useful if we bear in mind the multiplicity of ways to define and understand governance in the literature.

The analysis will be carried out by dividing political science into five subfields based on the work of Anne Kjaer (2004): *international relations*, with the impetus of James Rosenau (see for instance Rosenau 1992); *European governance* (as a particular case in international relations) defended by authors like Marks and Hooghe or Bache and Flinders (see for instance Bache and Flinders 2004); *public administration and public policy*, with the influential work of Rod Rhodes; *comparative politics – the state and economic development in the developing world*, whose main supporters are Andrew Gamble and Bob Jessop (see for instance Jessop 1998); and, finally, *comparative politics – theories of democratisation in the developing world*, with Guy Peters and Paul Hirst (see for instance Pierre and Peters 2000 and Hirst 2000) as main enthusiasts. The local level is purposely neglected in this section as it will be focus on in another section.

In *International relations*, concerns about governance emerged out of growing globalisation trends. The main question remains to be answered: how are supra-state agencies, inter-state agreements and private governance practices at the international level monitored and controlled by domestic publics (Pierre and Peters 2000)? “The problem is not ungovernability *per se*, but how world affairs are governed and how that governance is refracted in national states” (Pierre and Peters 2000, p.16). Legitimacy questions of policy-making and implementation are related to outcomes, which require global institutions to be efficient. Another relevant question is whether or not nation-states can be surpassed at all by international rules. Within this scope, the interest on democratic accountability of such international institutions is growing, i.e. trying to understand how it could be increased (Kjaer 2004). According to Jörgens (2004) scholars of international governance have placed much emphasis on two distinct modes of governance to explain how international agendas reach the domestic level: one, on processes of multilateral negotiations (harmonization) within international regimes; the other, on unilateral coercion (imposition) by individual states or international organisations. But when it comes to the sustainable development agenda, a third mode of global governance has not received due attention so far, and for him and other authors, this distinct mode is based on cross-national diffusion or international learning (see Lafferty 2004, Meadowcroft 2004a, Jörgens 2004). How international agendas persuade or determine domestic agendas is an appealing theme for international governance for sustainable development. The recent political efforts to reform the institutional architecture of global sustainable development governance, such as the claims towards a World Environment and Development Organisation (see Rechkemmer 2005 or Simonis 2002), represent one of the major current international discussions. Lafferty is keen to say that if there “ever was a policy area that requires both a ‘pooling of sovereignty’ and a sense of ‘transnational citizenship’, it is sustainable development” (Lafferty

2004, p.19). The sustainable development agenda, with its origins in the international domain and adopted by its organizations and processes (an 'outside-in' programme), poses several challenges to existing international and national democratic practices – raising different issues of legitimacy, accountability, transparency and efficiency (Lafferty 2004). International governance processes particularly impact on indicators to monitor sustainable development at all territorial levels. The issue of the recent harmonisation challenge of global sustainability indicators and the global-local interplay are some topics for later discussion.

Concerning the *regional level*, the researchers of *European Governance,* rather than exploring the international relation issue about the extent of integration, identify the actors involved in the European Union (EU) policy process and analyse the impact on national policy-making (what are its consequences?) (Kjaer 2004). The legitimacy of policies seems to derive mainly from outcomes too (the efficiency of EU policy-making), but where again concerns with a democratic deficit (of the EU) have been raised[1]. The main strands of this regional approach focus respectively on supranational governance (with the work of Stone Sweet and Sandholtz), on network governance (with the work of Eising and Kohler-Koch) and, the most widely known work, on multilevel governance (for instance, Marks and Hooghe) (Adshead 2002). Hence, the specific institutional arrangements vary according to policy sector (Eckerberg and Joas 2004, Fairbrass and Jordan 2004). Considering the sustainable development agenda, the interesting article of Bomberg (2004) provides good insights into the extent to which the EU has moved from a system of economic governance – developed to pursue and implement goals of market liberalization and integration, and free trade (Single European Market Project) – to a system of governance for sustainable development. She concludes that a key difference between a system of economic governance 'tweaked' to address sustainable development, and a system of governance for sustainable development has not been bridged, not even in rhetoric. The dynamics of European governance processes have also been evident and preponderant in the process of developing sustainability indicators. These aspects and their impacts at the local level will be explored in more detail in Chapter 3.

Taking into account national governance changes, in the subfield of *public administration and public policy,* the meaning of governance re-emerged mainly from a wave of reforms in the public sector during the 1980s, named the New Public Management reforms. In the aftermath of these reforms, an increasing number of policy networks have emerged in the provision of public services. These gave rise to increased fragmentation and problems of how to control and coordinate network activities (Kjaer 2004). In this case, the focus of attention has been on the efficiency of public policy-making and implementation at national and subnational levels. The legitimacy of policies is mainly seen to derive from outcomes (output-side): from effective institutions and performance that can deliver the expected outcomes. The question of how democratic accountability is ensured is not a central one, but has been receiving growing attention within this subfield (Kjaer 2004). By opposition, democratic accountability has been one of the major concerns when considering sustainable development administration and policies at national and local levels, along with other concerns that will be reviewed in the next section. In the opinion of Lundqvist (2004), the

[1] In an effort to reform European institutions and governance, the European Union has identified five 'principles of good governance' with the main goal of strengthening democratic governance (see EC 2001). The five principles are *openness*, *accountability*, *effectiveness* and *coherence*. These 'principles of good governance' reinforce those of *subsidiarity* and *proportionality* and are supposed to nurture European governance as the rules, processes and behaviour that affect the way in which powers are exercised at European level.

prerequisites for 'well-functioning, effective and politically legitimate governance for sustainable development' are obviously much more complicated than in other policy areas. Bressers (2004) comments though that almost all attention of the debates on sustainable development governance at national and subnational levels has been dominated by a search for new and innovative modes of steering – 'all for good reasons and with interesting results'-, but forgetting the core problem of the 'implementability' of those policy instruments. This is a major point for the argument of this research:

> "(…) *the robustness of the effects they* [steering mechanisms] *are designed to achieve, are highly dependent on the elemental processes that have been at the core of the policy debate for decades. It is vital, therefore, that one pursues a more fundamental discourse of instrumental effectiveness, at the same time that one searches for new methods of implementation" (Bressers 2004, p. 285).*

Finally, within *comparative politics* studies, there are two main debates: one concerning the role of the state in economic development and the other related to democratization theories. But both of them debate the conditions of governance, mainly in less developed countries and question why some economies and societies are less governable than others[2]. But this is not the focus of this work. Therefore, only a superficial review of the main issues is provided here. The first is concerned with the discussion of how institutions for economic policy-making and implementation are set up and what are their consequences, and less attention is paid to democratic-input procedures. It has been implicitly assumed that institutions generate legitimacy through effective outcomes (Kjaer 2004). The second debate focuses on institutional frameworks for political regimes. Governance is about the setting, application and enforcement of regime rules, but the focus is on the *setting* of rules, precisely because a transition implies moving away from one institutional set-up to another. Democracy and democratic accountability are assumed as main issues since it is a question of how to reinforce trust and reciprocity of networks (Kjaer 2004). The sphere of sustainable development governance within comparative politics takes on completely different forms than those which characterise the aforementioned debates, centred on Western democracies. The role of environmental conditionality in development aid politics, the importance of grassroots networks and international NGOs on governance for sustainable development in developing countries are the main focus of attention.

Given these different approaches to governance theory, with different focuses of attention and different concerns, it should be stressed that it is nonetheless hard to separate them one from the other. The very focus of governance theory, i.e. to investigate the political implications of, and responses to, social, environmental and economic change, indicates that clear-cut boundaries between those different political science subfields cannot be upheld (Kjaer 2004). This globalized world requires governance to make links between different spatial scales so that effective action at the local level may depend on decisions taken at a higher level (Stoker 2000). Thus, all the boundaries of this sector analysis become somehow illusive particularly when considering

[2] Particularly, the role of the World Bank in developing countries should be emphasised. The World Bank has initiated a large debate on 'governance' in the 1990s and very much contributed to the emanation of the concept, when it identified bad governance as the main cause for economic problems in the developing world (Kjaer 2004). Kjaer (2004) identifies three ways of how governance and the World Bank interrelate: '*good governance*' as a policy condition (to enforce public sector reforms, the legal framework for development, accountability, transparency and information); *governance* of the Wold Bank *as organization* (whether it is accountable and transparent); and, the World Bank as part of *global governance processes* (whether it becomes more transparent, accountable and contributes to global issues such as terrorism, environmental and sustainable development problems, etc.).

sustainable development policy, which is a case *par excellence* of dispersed decision-making authority and competences across multiple territorial levels and even across generations. The next section adds to our debate general and crucial values of governance for sustainable development.

2.2.4. Core Values of the Discourse on Governance for Sustainable Development

As it was noted before, issues of legitimacy, efficiency, democracy and accountability are raised by different governance approaches. The tensions between these core values or underlying concepts[3] of the discourse on governance highlighted by several researchers are always present, and when it concerns sustainable development, the trade-offs between them are particularly vibrant. According to Adger *et al.* (2003) the failure to address them all[4] together has adversely affected environmental decision-making and disrupted transition to sustainability. They provide numerous interesting examples of this disruption and their consequences and stress the need for research to engage the interconnections between the different values, away from the tendency to focus on one particular facet of (environmental) decision-making (see Adger *et al.* 2003).

Legitimacy

A first main problematic is how to bring about *legitimacy* to public policies in such a complex governing system. Adger *et al.* (2003) define legitimacy as a measure of the 'rightness' (or social responsibility) of a course of action. Scharpf (cited in Kjaer 2004) provides an interesting distinction of how legitimacy can be gained, and for the purposes of this work, this proposal is followed closely[5]: legitimacy can derive from the 'input-side' (processes of decision-making) and/or the 'output-side' (outcomes of decision-making).

'Input-oriented' legitimacy comes from an agreement of those who are asked to comply with the rules, and thus deriving from the "establishment of democratic procedures, accepted by a majority, for taking collectively binding decisions" (Kjaer 2004, p.12).

'Output-oriented' legitimacy derives from the effectiveness of rules to produce tangible outcomes (at a given cost), and consequently referring to "substantive criteria of *buongoverno*, in the sense that effective policies can claim legitimacy if they serve the common good" (ibid, p.12).

Traditionally, the typical dilemma is whether legitimacy can be assured by both sides, input and output, or 'whether there is a trade-off between the two'. In other words, the main question is to know if legitimacy of public policy can enhance efficiency and effectiveness (output) without decreasing democratic accountability (input). Goss, however, makes a very good point when underlying that there is a wide range of legitimacies that citizens are willing to admit (Goss 2001). She exemplifies, describing three types of legitimacy among this variety. One, which is one of the most important for this work on sustainability indicators, can derive from knowledge: "People have to have the right knowledge to make decisions, and this underpins the legitimacy of professionals and public managers. The enduring tension between professionals and users about who knows

[3] Following closer the work of Anne Kjaer (2004).
[4] Their paper looks at *efficiency*, *equity*, *effectiveness* and *legitimacy* as main criteria for 'good' environmental governance (see Adger et al. 2003).
[5] For further insights on the concept of legitimacy and how it can be obtained see, for instance, Scharpf (1999).

best is in many ways a battle between the legitimacy of the 'expert' and 'personal' knowledge and this holds true for the uncertainties of sustainable development" (Goss 2001, p.23), and as a consequence for sustainability indicators as we will see further on. Legitimacy can also derive from leadership or the 'capability to mobilise followers' (also involving questions of power) or can emerge from the capability to build consensus: to find a solution with which everyone agrees (Goss 2001). She concludes that "the emergence of relationships of governance makes it clear that we are in an era of multiple legitimacies, all of which are relevant and important, and therefore that effective governance requires both that all actors are able to recognise the legitimacy of other actors, and that they are able to negotiate shared legitimacy on a continual basis" (ibid, p.23). We will see how important this 'battle' is for the role of sustainability indicators in governance contexts.

Efficiency

The issue of *efficiency* of public decisions or policies raises questions on how to control the use of resources by multiple actors in order to perform efficiently and how to assess success if the delivering of outcomes is dependent of coordination and cooperation of those multiple actors. To be efficient is to be flexible in order to produce tangible results at lower costs. Implicit here is the trend towards the proliferation of targets, criteria and indicators against which performance is judged, thus linking incentives, rewards and sanctions to such assessment (PASTILLE 2002, Seasons 2003) and sustainability indicators have not been an exception of this trend at some point.

Flexibility is needed, but Bressers (2004) alerts that new modes of governance for sustainability ultimately depend, as much or even more, on conventional strategies for translating goals and objectives into tasks and responsibilities at the level of individual companies, other organizations and households. Outcomes are the justification for action, but they need to be considered in a stronger, and not weaker, democratic environment. Mineur (2007) states, for instance, that the tension between efficiency and democracy is strong, when democracy and participation is time consuming and efficiency is about using as little time as possible to deliver results.

Democracy

Moreover, considering *democracy*, it is argued by Hirst (2000, p. 14) that we need to rethink the forms of democratic accountability and the roles of the state if the "weaknesses of modern governments, alluded to in the discourses of governance, are to be overcome". Also Hirst (1990), cited in Rhodes, comments that representative democracy delivers "low levels of governmental accountability and public influence on decision making" (Rhodes 2000, p.76).

Representative democracy is increasingly a scarce model for the complex web of relationships in governance systems and needs to be enhanced through other democratic forms and channels that can bring about more participatory and inclusive procedures. Lafferty (2004, p.21) also reinforces that idea by arguing that "a serious analysis of the challenges facing governance for sustainable development clearly implies a challenge to existing democratic norms and procedures", particularly when political time frames do not match with ecological lifecycles.

However, even considering that networks bring the possibility to engage multiple actors, it is clear that participation does not equate to power, and that the emergence of governance does not necessarily enhance the position of weaker social groups. It may indeed concentrate more power

in the hands of those groups and actors with the necessary resources to operate most effectively in complex contexts (Bache and Flinders 2004). Bearing in mind the distributional consequences of a decision, equity is also at stake (Adger *et al.* 2003). Participation is important, but it is far from sufficient (Meadowcroft 2004b). This argument leads us to one more crucial value for governance theory: accountability.

Accountability

For Kjaer (2004), *accountability* implies responsibility; to be accountable is to be held responsible and governance theory has a lot to do with defining mechanisms of accountability. Governance scholars suggest that the growth of policy networks at local and transnational levels is complicating accountability structures even more: "The larger the network (from local to national and international levels) and the wider it expands, the more likelihood there is of difficulty in locating the core of authority" (Kjaer 2004, p.198). Accountability may simply disappear in such a web of institutions, because defining who did what is no longer straightforward (Rhodes 2000, cited in Kjaer 2004, p.14). Thus, different levels of action entail different consequences for accountability and democracy, and that means that at the local level, at a smaller scale of action, it is probably more realistic to find measures to support stronger accountability than at the international one. Table 2.1 summarises the main ideas of this section.

Table 2.1 - Core values of good governance and sustainable development

Core Values for 'Good' Governance	Crucial implications for Sustainable Development
Legitimacy	The need to recognise multiple legitimacies: that all actors are able to recognise the legitimacy of other actors and that they are able to negotiate shared legitimacy on a continual basis (from the processes or the outcomes of decision-making)
Efficiency	The need for a continuous evaluation and assessment of policies, linking goals into tasks and activities (with associated indicators) for every actor
Democracy	The need to challenge existing democratic norms and procedures to include more participatory and inclusive procedures
Accountability	The need to find measures to support stronger accountability structures at different territorial levels of action

The need to understand the trade-offs between these values in the discourse on governance and their implications for the challenges of sustainable development need to be accompanied by a clear understanding of institutions, context and scale (Adger *et al.* 2003, Fraser *et al.* 2006). The next part will try to shed some light on the different theoretical implications for the role that institutions play in determining the outcomes of implementing local sustainability indicators.

2.3. The Different Approaches of 'New Institutionalism' and the Role of Institutions

Given the institutional basis of the different theoretical approaches to governance and the research aim of understanding the institutional arrangements supporting sustainability indicators' processes at the local level, this section tries to refocus the debate on the discussion around institutions – their main analytical approaches, features, assumptions and possible implications for the role of indicators –, and therefore to reinforce the basis of the main argument of the research. As a starting point, we consider and define institutions according to the concept proposed by March and Olsen (1989), as including "not only the routines, procedures, roles, strategies and organizational forms around which political activity [regarding the indicators] is constructed, but also the beliefs, paradigms, cultures and knowledge that surround, support, elaborate, and contradict those roles and routines" (March and Olsen 1989, p.22).

'New Institutionalism' emerged in the mid-1980s and has become central in all corners of social science research in economics, political science, public administration, sociology, international relations, etc. Regardless of any conceptual division, the central aspects in New Institutionalism try to understand and explain how institutions affect the behaviour of individuals and how institutions are created and modified through time. The three fundamental questions that any institutional analysis tries to react upon are thus: how actors behave, what institutions do and why institutions persist over time (Hall and Taylor 1996). New Institutionalism presupposes that it is through the actions of individuals that institutions have an effect on political outcomes. In broad terms, Hall and Taylor explain that "new institutionalists provide two kinds of responses to this matter, namely the 'calculus approach' (instrumental and based on strategic calculation) and the 'cultural approach' (interpretative and based on symbols, scripts and routines provided by the world of institutions)" (Hall and Taylor 1996, p.7). Schmidt (2008) adds a 'discursive approach' (dynamic and based on the power of ideas and discourses) that, together with the others, sustain different explanations regarding how institutions are created and how they persist over time – the second central aspect of institutionalism.

At least four different analytical approaches within New Institutionalism have appeared over the past decades: historical institutionalism, rational choice institutionalism, sociological institutionalism and the 'newest' discursive institutionalism (Hall and Taylor 1996, Schmidt 2008). Hall and Taylor in their 1996 essay aimed at clarifying what is distinctive in each of the first three schools, arguing at the same time for the need to converge the quite separate approaches. Using that analytical work to briefly point out some key issues of New Institutionalism, we also add the more recent discussion around a 'fourth' school of thought with the help of the topical work of Schmidt (2008) and seek to understand if and how this new approach is contributing to the integration of the insights of the 'older' schools. But let us look closer to each school of thought.

Historical institutionalism

Historical institutionalists treat institutions as historically established patterns, following logic of path dependence specific to a given society (Orren and Skowronek 1995, cited in Kravchuk 2008). This is why they consider institutions as 'resistant to change' and mediated by characteristics of a given context, often inherited from the past. Kravchuk (2008) explains that the foundation for historical institutional analysis is the general proposition that institutions will generally matter more than

individuals in the long run, meaning that they subordinate agency (action) to structure (rules)[6]. They do not specify the causal chains between institutions and individual behaviour beyond this, but when turning to the explanation of how institutions emerge and change, historical institutionalists see a world already full of institutions that frame the way in which power relations influence the creation of new institutions and in which some groups of interest have disproportionate access to decision making processes (Hall and Taylor 1996).

They "rarely insist that institutions are the only causal force in politics. They typically seek to locate institutions in a causal chain that accommodates a role for other factors, notably socioeconomic development and the diffusion of ideas. The historical institutionalists have been especially attentive to the relationship between institutions and ideas or beliefs" (Hall and Taylor 1996, p.10). This turn to ideas (although in a largely static way) makes a good connection with discursive institutionalism. Finally, it is worth mentioning that they explain institutional changes as originated by unexplainable critical moments, or by what Hall and Taylor (1996, p.10) call "critical junctures, (…) from which historical development moves onto a new path". Although they generally explain those critical junctures with periods of economic crisis and military conflict, many do not develop further responses to this question (Hall and Taylor 1996). Table 2.2 summarizes and compares some main features of these two schools as well as the remaining approaches.

Within this perspective, sustainability indicators can be considered to have a limited impact on institutions, since they are seen as inserted in self-reinforcing historical institutional paths unless critical moments occur. This perspective is nevertheless crucial to understand the influence of historical, cultural and social path dependencies on the role of indicators.

Rational choice institutionalism

Rational institutionalists define a more precise set of institutional concepts aiming to rely on the predictive power of their own models. They do reveal a simplistic image of human motivation, seeing the preferences and goals of the actors as fixed and exogenous. "Rational choice theorists often posit a world of individuals or organizations seeking to maximize their material well-being. Many explain the development of an institution by reference to the efficiency with which it serves the material ends of those who accept it" (Hall and Taylor 1996, p.16). Institutions are, therefore, crucial for providing information for the relevant actors about the behaviour of others, for providing enforcement mechanisms, penalties for offenses, or the like, so as to reduce uncertainty and lead to better strategic decisions and better social outcomes (Hall and Taylor 1996).

They explain the origins of an institution largely in terms of the effects (benefits) that follow from its existence, revealing some confusion between institutional creation and its actual persistence or development. Institutional creation is 'highly purposive' (intentional) under the control of relevant actors and 'quasi-contractual, marked by voluntary agreement among relatively equal and independent actors'. Therefore, unintended consequences of institutions are neglected and taken out of a context that is far more complex in terms of unequal power relations, motivations, preferences and certainties (Hall and Taylor 1996).

[6] However, this does not mean "a wholesale negation of 'great (wo)man theories of history'. History is replete with courageous individuals who impress us with their exploits and achievements. However so, researchers must fairly judge the choice set that circumstances have presented to such individuals" (Kravchuk 2008, p.175).

Within this perspective, sustainability indicators can be seen as instrumental processes or procedural tools aiming at clarifying contexts and providing information so that decisions can be better calculated and strategic sustainability-oriented actions better planned and implemented. As such, they may become simply another set of performance indicators aiming to emphasise accountability and transparency within prevailing rational practices, and may be treated like all other evaluation tools within a "paper-trail culture of government organizations" (Rydin 2003, p. 158). Also, indicators may be considered to reduce the transaction costs involved in acquiring such technical knowledge and to modify the incentive structure (Rydin 2003).

Sociological institutionalism

Sociological institutionalism arose in reaction to formal organizational theories arguing for the need to go beyond the insights of formal organizational analysis that on their own do not provide an adequate explanation of the dynamics and outcomes of policy contexts. Organizational analysis focuses on the identification and mapping of the internal divisions of a governmental organization – such as departments, divisions or other units, for example, within a municipality – or the characterization of different organizations – public or not – involved in a certain network. It stresses the formal connections and relationships underpinning the policy context, since the set-up until the implementation of a certain policy or programme, and undermines the more informal and cultural relations (Rydin 2006). The central claim of this approach is that "attention to (only) such organizational arrangements does not reveal how the linkages within and between organizational units are activated" (Rydin 2006, p.16). The combination of the formal and informal, the explicit and implicit is therefore a key feature of sociological institutionalism.

Sociological institutionalism is *"*an actor-centred account that manages to see institutions as comprising actors with their own sense of agency, but also as sets of arrangements that place some constraints and pressures on those actors. It sees the informal as being as important as the formal. And it looks to the detail of everyday engagement between actors and how they take the mass of individual decisions during their daily activities to understand collective outcomes at the organizational level*"* (Rydin 2006, p.17-18).

Therefore, institutional forms and procedures are seen as "culturally specific practices, akin to the myths and ceremonies devised by many societies, and assimilated into organizations, not necessarily to enhance their formal means-ends efficiency, but as a result of the kind of processes associated with the transmission of cultural practices more generally. (…) [As such], "one can see the influence of social constructivism on the new institutionalism in sociology" (Hall and Taylor 1996, p.14-15). A new institutional practice tends to be created when it strengths the social legitimacy or social 'appropriateness' of its actors or when it is highly valued in a certain cultural environment (Hall and Taylor 1996). According to Schmidt (2008), we cannot talk about a turn to ideas or even to discourse in sociological institutionalism as this approach is all about ideas and discourses, particularly because it focuses on norms, cognitive frameworks and meaning contexts. They differ from discourse analysts much more on the extent to which ideas are treated as static structures (for sociological institutionalists) or dynamic constructs (for discursive institutionalists).

Sustainability indicators are here considered social constructions and context dependent, which may imply that they emerge from a growing technical expertise in the field that "creates

professional communities with the cultural authority to press certain standards on their members" (Hall and Taylor 1996, p.17). In other cases, indicators are said to emerge "from a more interactive process of discussion among the actors in a given network – about shared problems, how to interpret them, and how to solve them – taking place in a variety of forums. (…) Out of such interchanges, the actors are said to develop shared cognitive maps, often embodying a sense of appropriate institutional practices, which are then widely deployed. In these instances, the interactive and creative dimensions of the process whereby [indicators] are socially constructed are most apparent" (ibid.). Implicit here are legitimacy claims and power relations and the need to understand them in context. This perspective clearly nurtures our research position, although we never neglect possible influences of the other analytical approaches.

Discursive-institutionalism

The newest approach to New Institutionalism provides a prominent role for ideas and discourse in politics, while providing a more dynamic approach to institutional change than the older three analytical approaches. Ideas are defined as "the substantive content of discourse" and discourse as "the interactive process of conveying ideas" (Schmidt 2008, p.303). The definition of discourse includes not only "ideas or 'text' (what is said) but also context (where, when, how, and why it was said). The term refers not only to structure (what is said, or where and how) but also to agency (who said what to whom)" (Schmidt 2008, p.305). For discourse theorists it is neither the rational calculations nor the social norms that shape the relationship between institutions and human behaviour but the "(collective) ideas, interpretations and meanings attached to (parts of) the world" (Arts and Buizer 2008, p. 2).

Within this school of thought, institutions are created by what Schmidt calls "background ideational abilities" of agents within a given "meaning context" and they change or persist over time through what she designates as "foreground discursive abilities", following a logic of communication. Institutional change is therefore very dynamic and explained by discourse exchange through two main interactive processes of "(*a*) discourse *coordination* among policy actors in policy and program construction and (*b*) discourse *communication* between political actors and the public in the presentation, deliberation, and legitimization of those ideas, against a background of overarching philosophies" (Schmidt 2008, p.321).

For the most part, discursive institutionalists consider that the three older new institutionalisms take institutions (once created) for granted, whether as continuing structures (the historical regularities of historical institutionalists) or as the contexts within which agents act (the incentive structures of rational institutionalists or the cultural norms of sociological institutionalists) (Schmidt 2008). While for these approaches institutions are external to the actors collectively, for discursive institutionalism they are simultaneously taken for granted (as the context within which agents think, speak, and act, building on the three older approaches as background information) but also as contingent (as the results of agents' thoughts, words, and actions and the power of discourses). These institutions are both structures that constrain actors and constructs created and changed by those actors (Schmidt 2008).

Schmidt underlines that although some scholars in discourse institutionalism have used the same term, or similar ones (such as ideational institutionalism, constructivist institutionalism, or strategic constructivism), not all of them go so far as to conceive a fourth institutionalism. "This is mainly because their purpose is to blur the boundaries among all three older institutionalisms, and to show

how ideas and discourse can advance knowledge in the social sciences across methodological approaches" (Schmidt 2008, p.304). She goes on affirming that "for many political scientists, the turn to ideas has been a useful corrective to the limits of new institutionalist approaches and a tacit acknowledgment of their difficulties in explaining change. Importantly, large numbers of new institutionalists, whether rational choice, historical, or sociological institutionalists, have sought to use ideas to counter the static and overly deterministic nature of institutions in their explanations" (Schmidt 2008, p.304).

The discursive analysis surrounding sustainable development policies has been receiving impressive attention in the past two decades (see for instance Dryzek 2005, Hajer and Versteeg 2005 or Arts and Buizer 2008). Regarding the role of sustainability indicators within discourse institutionalism, this analysis takes on them as institutionally embedded as well as discursively constructed. Mineur (2007) considers that sustainability indicators always represent (certain) values and norms since they are by nature subjective. In her work, she identifies five discursive elements to help understand indicators in their context, namely, *problem representation* (what problems the indicators address and what functions are ascribed to them), *legitimacy* (how the indicators obtain legitimacy and to whom knowledge is accredited in the process), *ownership* (who owns the indicators and who is targeted by them), *actors motives* (what type of incentives to work with the indicators), and *democratic ideal promoted* (what democratic ideal is promoted by politicians) (see Mineur 2007, p.66-69). According to her, all these elements are linked to a "power perspective" and "may reveal underlying rationales shaping the understanding of the indicators by those working with them" (Mineur 2007, p.70).

Table 2.2 – Summary of the main features of the four approaches of 'New Institutionalism'

'New Institutionalism' approach	Key features
Historical Institutionalism	**1.** The relationship between institutions and human behaviour is conceptualised in *broad* terms **2.** The *asymmetries of power* associated with the operation and development of institutions are emphasised **3.** View of institutional development as *path-dependent* and with *unintended* consequences (inefficiencies) **4.** Institutional analysis is integrated with other factors, such as *ideas,* that may contribute to political outcomes
Rational Choice Institutionalism	**1.** The relevant actors have *fixed preferences* and behave entirely *instrumentally* so as to maximize their attainments in a highly *strategic* manner with extensive *calculation*. **2.** Politics is a series of *collective action problems* (such as 'prisoner's dilemma' or 'tragedy of the commons') where institutions may prevent such problems **3.** Institutions provide *information* and *enforcement mechanisms* (such as property rights, rent-seeking, transactions costs) that reduce *uncertainty,* leading to better strategic calculations and better social outcomes **4.** Institutional creation resolves around *voluntary agreements* by relevant actors and if institutions persist it is because they provide more benefits than alternative forums.
Sociological Institutionalism	**1.** Institutions are defined more broadly to include not just formal rules, procedures or norms, but symbol systems, cognitive scripts, moral templates that provide the '*frames of meaning*' which guide human action **2.** Institutions are influenced by *social constructivism:* institutions are said to provide the very terms through which meaning is assigned in social life, framing preferences and the actors' very identity. **3.** The relationship between institutions and human behaviour is *highly interactive* and *mutually constitutive* **4.** Institutions are created when it enhances the *social legitimacy* of the organization or its actors or when it is *highly valued* within a broader cultural environment. A central question is what confers 'legitimacy' or 'social
Discursive Institutionalism	**1.** Institutions are simultaneously internal *structures* and *constructs* to actors **2.** Institutions change is dynamic and explained across time through actors' *ideas* and *discourse*, taking on the other institutional approaches as background information. **3.** 'Background ideational abilities' that are put in their 'meaning context' and 'foreground discursive abilities' follow a logic of communication that determines institutional change.

Source: Adapted from Hall and Taylor (1996), Rydin (2006) and Schmidt (2008).

In short, none of the four approaches appears to be 'wrong-headed' or 'substantially untrue'. Each of them seems to be providing a partial account of reality, in a given situation, with different levels of abstraction and different kinds of generalizations, and framing different dimensions of the relationship between human action and institutional impacts (Hall and Taylor 1996, Schmidt 2008). "For instance, an actor's behaviour may be influenced both by strategic calculation about the likely strategies of others and by reference to a familiar set of moral or cognitive templates, each of which may depend on the configuration of existing institutions" (Hall and Taylor 1996, p. 22) or even by the power of certain discourses in a given context of meaning. This is why Hall and Taylor argue for new research approaches that can reflect a more open and extensive interchange among them. Schmidt (2008) also reiterates this call for crossing boundaries among their theoretical and methodological approaches, believing that discourse institutionalism has a great capability to achieve that convergence.

2.4. Local Conditions for Better Governance for Sustainable Development

After reviewing crucial theoretical considerations, we now explore the more empirical and normative nature around the concept of governance and its implications for the sustainable development debate, focusing mainly on the local level. The more pragmatic use of the concept of governance allows for relevant reflections to assess the conditions in which institutional and decision-making practices for sustainable development may work best. Several international organizations such as the World Bank, the OECD, the UN or the EU have taken the lead in promoting empirically based knowledge on 'good governance', through the diffusion of several performance reviews, checklists with normative principles and criteria, prescriptive policy instruments and best practice sharing (see particularly Jordan 2008). At the same time, numerous empirical works and comprehensive comparative analyses (such as Janicke and Weidner 1997, O'Riordan and Voisey 1998, Innes and Booher 2000, Lafferty 2001, PASTILLE 2002, Gahin *et al.* 2003, Evans *et al.* 2005, Dluhy and Swartz 2006, among others) have been undertaken in order to examine factors and conditions, at the national or local level, that may reinforce the ability of local governance arrangements to adopt and develop initiatives that will support sustainable development.

It is probably at the local level that it has been tried harder to integrate both policies and practices towards sustainability, that different modes of governance have been implemented and also that crucial problems and challenges of sustainability have been tackled. Local governments plan and control the very elements at stake in sustainability – development, resource use, waste, energy consumption, partial regulations concerning production and land use control (Glass 2002). Being closer to the actual territory and its people allows more knowledge to be gathered about environmental, economic or social problems and conflicts, as well as coming up with the respective solutions. It also makes it easier to foresee scenarios of evolution and adequate development of the local context, which may promote sustainable development objectives. Being closer to the actual territory also means being 'closer' to local stakeholders and public which may facilitate the mobilisation of the various local actors in innovative approaches and schemes for new governance (Fidélis and Moreno Pires 2009).

For Luhde-Thompson (2004, p.485) the art of "governing sustainable cities" is thus, to "create competent local governments that, in interaction with a highly responsible and responsive civil society, apply a form of governing that brings about the most sustainable solutions". However, within this perspective several questions still remain to be answered: how competent are local governments? How capable is civil society and what type of solutions are needed, when and where? An empirical and normative approach to governance concerned with these major questions can mostly steer "interactive and reflexive processes of debate and dialogues, not generating and disseminating blueprints (…) and other kinds of hierarchical command" (Meadowcroft *et al.* 2005, cited in Jordan 2008, p. 25).

According to the review of the aforementioned studies and their main conclusions, a set of specific factors and conditions that may influence local governance for sustainable development was sketched (see Table 2.3). Particularly inspired by the work Evans *et al.* (2005)[7], these factors were grouped into two separated angles: the conditions generated by 'local governments' and the factors mainstreamed by 'civil society' – perceived here as "all social, economic and political activities that take place outside of local government" (Evans *et al*. 2005, p. 14).

As this research is particularly interested on the specific contributions of local governments, the role of civil society for sustainable development will only be analysed from the 'governmental' perspective (building efforts of local authorities to enhance social capacity). Nevertheless, many authors agree that the main capabilities of the civil society for good sustainable development governance are related to the level of education or environmental awareness of the population; level of activity of civil society in general[8]; level of 'compliance' with sustainable development goals (by the private sector, households, etc.); and, last but not least, the level of confidence or trust in local government policies. Focusing on local governments, some key factors that may reinforce their strategic role will now be analysed in more detail.

Learning efforts

One first factor is related to the learning efforts developed by local governments. Local governments need to be learning organisations and to drive sustainability onto the local agenda. According to Block and Van Assche (2001, p.11) learning organisations are "organisations where people continually expand their capacities, where new thought patterns are developed, where collective targets are striven for, where people continually learn how to learn together (Argyris 1996), systematically investigate the (technological and social) changes occurring in their environment and take account of these changes in their activities (Becker 1994)". Therefore, institutional learning – meaning the processes that indicate the ways in which new ideas become

[7] The conclusions of Evans *et al.* (2005) are extremely relevant. They resulted from a three-year project - the DISCUS project (Developing Institution and Social Capacities for Urban Sustainability) - which looked in depth at 40 municipalities across Europe. The project investigated what types of institutional and social capacity were most likely to result in sustainable development policy achievements at the local level. The research identified six key institutional capacities for local governments: committed officers; political will; training for sustainable development (politicians and officers); mainstreaming into working practices; national and international networks and activities; 'province' level support and networks. Social capacity (the networks and inter-connections between individuals and civil society) was not measured by the DISCUS project, but the efforts of local authorities to build social capacity [in sustainable development] were considered. This included: Local Agenda 21 (LA21) capacity building; marketing and promotion; centres or forums; information provision to civil society; links with organised interests (http://www.idea.gov.uk/idk/core/page.do?pageId=189667).

[8] For Fernández (2004) absenteeism or lack of participation and bad decisions following a deliberative process can clearly harm progress towards sustainable development. She calls it the 'participation trap' where participatory mechanisms do not lead to the expected outcomes in favour of sustainable development (Fernández 2004).

established within governmental and other institutions or organizations (Evans *et al.* 2005) – must be challenged through creativity, innovation and flexibility in policy-making.

Table 2.3 - Factors and conditions for effective local governance for sustainable development (SD)

Local Governments	
Learning efforts	- Ability/Capacity to develop new, unusual solutions - Development of techniques, approaches, working practices, etc. to enhance staff skills and stimulate new ways of thinking and working
Long-term vision for Sustainable Development	- Support for a distant vision without losing orientation for short-term action - Strong political commitment for SD goals
Partnerships/alliances with key individuals/organizations outside the public sphere	- Access of different groups within civil society to decision-making and implementation processes - Establishment of alliances/links with people and non-public organisations
Efforts to build social capacities in Sustainable Development	- Information supply/communication to civil society - Marketing and promotion of initiatives related to SD - Informal relations with people
Interaction with national/international actors	- Development of projects/activities/networks with other levels of government or with national/international organizations concerning SD - High level of fiscal, legal and political autonomy from central government
Internal/Organizational conditions	- Awareness/training/education for sustainable development of civil servants - Internal/ departmental organization to facilitate integration/ evaluation/ monitoring of policies - Establishment of internal sustainable working practices
Civil Society	
Awareness of Sustainable Development challenges	- Level of education/awareness of the population/enterprises/non-governmental organizations, etc.
Mobilisation capacities	- Level of activity/mobilisation/involvement of civil society in public affairs
Confidence/trust in local policies	- Level of trust/confidence on local governments/policies and on the public sector in general
Compliance with environmental goals	- Level of compliance with environmental/SD goals from population/private sector/etc (responsible consumption; responsible production, etc.)

Source: Adapted from Evans *et al.* (2005).

Many researchers agree that local sustainability is dependent on innovation and that new and unusual solutions need room to develop (Astleithner and Hamedinger 2003b, Luhde-Thompson 2004), to stimulate learning and knowledge towards sustainable development. Sustainability indicators can fulfil their role as learning instruments in this instance (Block and Van Assche 2001), meaning that their development may bring some sort of creativity, innovation and flexibility to policy-making, paying particular attention to the conciliation of different types of knowledge, to transparency and trust on information, to the relation between producers and users of information, etc. Nevertheless, it should be noted that the actually affected players (politicians, civil servants, inhabitants, etc., and not only local governments) are the ones that demonstrate the behaviour that leads to learning (Block and Van Assche 2001).

Long-term vision for Sustainable Development

A second factor concerns the establishment of a long-term vision for sustainable development without losing orientation while implementing it in the short-term. The need to find the courage to support an ambitious but distant vision is obviously associated with the degree of political commitment devoted to sustainable development strategies together with an awareness of the particular role of the local authority. The existence of a strong and sound leadership is extremely important to include sustainability issues on the political agenda, particularly at the local level. However, political commitment needs to be accompanied by the adoption of integrated approaches to strengthen this long-term vision and by mechanisms to support the maintenance of programmes and policies in the long term, which as proved a difficult challenge even in 'leading' countries such as Sweden (see for instance the obstacles pointed out by Eckerberg and Dahlgren (2007) when analysing the implementation of LA21 in Sweden over the past years).

Partnerships or alliances with key individuals or organizations outside the public sphere

Although local government is clearly a key decision-maker – and the one that has the required legitimacy to escalate the conclusions from participatory processes into new policies and rules (Luhde-Thompson 2004) – it has to be aware that alliances and partnerships with key individuals and organisations representing civil society are crucial. Those alliances not only may provide access of different groups within civil society to decision-making, but also may enhance the acceptance of, and contribution to, decision-making and implementation processes by local actors and the local community (Evans *et al.* 2005). Community ownership must be fostered (Gahin *et al.* 2003). Using the words of Van Vliet (cited in Durant *et al.* 2004), collaborative partnerships make more sense when 'no one is capable of enforcing coordination against the will of other actors'. In this context, the conclusions of Meadowcroft (2004a)[9] are particularly interesting. When studying the role of public participation in decision-making for sustainable development, he suggests that from the three participatory currents – the *citizenship*, the *community-based*, and the *stakeholder*-oriented – the stakeholder-oriented, with the group-based processes it legitimates, is particularly important:

> *"Effective participation in governance for sustainable development will be found to depend somewhat less on the mobilisation of 'noble citizens' and 'dynamic communities' so beloved of democratic theorists and green activists, and rather more on interactions among representatives of the organised interests that are already enmeshed in the nexus of environmental problems."* (Meadowcroft 2004a, p.162)

Notwithstanding the 'type' of participants, a reconstitution of the relations of governments with other actors still needs to occur or to be reinforced. Local governments need to be involved with various levels of governmental and civic organizations, private enterprises, communities and citizens if they want to put into action crucial changes such as shifting patterns of mobility choices, food consumption, housing preferences or other issues. Different stakeholders provide additional resources not only in terms of knowledge, but also in terms of money, skills, time, etc. for the

[9] "Probably the most comprehensive and balanced critical assessment of participation as a mechanism for sustainable development governance produced to date" (Lafferty 2004, p. 322).

implementation of sustainable development policies and are therefore crucial for the development of sustainability indicators.

Interaction with national or international actors

Moreover, another factor, posed by the transboundary nature of sustainable development and stressed throughout this Chapter, reflects the way local governments interact with national and international actors. The development of projects/activities/networks with other levels of government or with national or international organizations concerning sustainable development is perceived as crucial to develop skills, knowledge, and awareness towards the vertical aims of sustainable development.

Internal or Organizational conditions

One fifth factor concerns the internal or organizational conditions of local authorities to embrace the challenges posed by the factors mentioned so far. An adequate level of training, education and professional expertise of the civil servants[10]of the local administrations, particularly in what concerns sustainable issues, is implied by these conditions (Evans *et al.* 2005). The way local government is structured is also important to facilitate policy integration (relative importance of departments; the way they interact; level of autonomy, and implicit resources from national governments, etc.). Finally, the establishment of some internal 'good' working practices, such as eco-budget or eco-purchasing, can have multiple effects outside the local authority's sphere.

2.5. Concluding Remarks

In order to answer the research questions and to build a theoretical basis that would enable stronger interpretations of the role of local sustainability indicators in Portugal, the discussion throughout this Chapter tried, in the first place, to clarify the relationship between governance – its possible definitions, different analytical dimensions, key terms and core values – and sustainable development. As they can be approached from very different perspectives and for very different purposes, we have established the lines according to which the research is framed and understood.

In fact, the whole research spins around the idea that sustainability indicators cannot be separated from the context in which they are applied. Their actual use and their steering potential is constrained by the particularities of that governance context, by the institutional patterns and changes at stake, by the different interpretations of what sustainable development means and entails, and by the tension around the main values nurturing the positions and attitudes of the most relevant actors involved. In the next Chapter, attention is devoted to the particularities of the literature on sustainability indicators and to the theoretical and methodological implications in choosing and using them in governance contexts.

[10] According to Evans the existence of highly educated staff is connected to higher motivation levels and to higher levels of commitment to sustainable principles (Evans et al. 2005).

CHAPTER 3
SUSTAINABILITY INDICATORS

"Are indicators just the 'policy accessories of the time – a must have in the current fashion of governance and will the current hyping of indicator projects fall into an inevitable cycle of downfall in the future?"
(Wong 2006, p.1).

3.1. Introduction

Chapter 2 was crucial to place evidence towards the concept of governance for sustainable development, to understand what it entails and why the literature talks about the challenge of 'adjusting' governance settings to sustainable development complexities. The main theoretical and normative features, assumptions, and possible implications for the understanding of the role of sustainability indicators were considered, sustained by the consideration that these indicators may contribute to this adjustment or rethinking.

We live in an information society in which the knowledge and the usage of new computer-based network information and communication technologies (ICTs) have largely enhanced our information-handling capability over the last twenty years, notably through the use of geographical information systems, personal computers and mobiles, various user-friendly statistical packages and so on (Wong 2006, Fuchs 2006). Some agree, however, that this information society lives in a permanent danger of becoming besieged by manipulative, manipulated, false and misleading information. This Chapter tries, therefore, to pay special attention to current information-handling debates, focusing on the different issues and methodological discussions around sustainability indicators. Methodological aspects have been enormously discussed in the literature and justify the need to consider, explore and summarize how these aspects vary in weight and characteristics for different literature approaches to sustainability indicators. This may enable a better understanding of how these aspects can interfere, constrain or potentiate the central governance factors considered crucial for sustainable development.

We will try to understand in the second part how sustainability indicators have developed and evolved over the last decades. Furthermore, a third part intends to briefly analyse the state of the art of sustainability indicator projects and frameworks at global and national levels, to be able to understand in the next Chapter if and how they impact on local projects. The fourth part aims to shed some light over the extensive literature on the indicators' methodological complexities and to review the different characteristics, roles and functions attached to these indicators, their different uses and possible outcomes, and diverse methodological considerations implicit or explicitly taken as valuable for different authors, organisations, politicians, experts and communities. Particularly interesting in this part, and a key aspect of this study, is the confrontation between the different positions of the two most explored approaches to sustainability indicators in the literature – the technical or top-down, and the participative or bottom-up – and to see how they tend to emphasise and argue for distinct aspects when developing sustainability indicators.

3.2 .The Spreading Culture of Indicators

> "*The changing face of cities and regions, and the development of new forms of institution and governance at different spatial levels have set in train a very dynamic policy agenda (…) and have no doubt boosted the importance of statistics and indicators in the policy arena"* (Wong 2006, p.6)

Some first introductory questions emerge from this statement: what is meant by indicators? Are they not the same as statistics? Others emerge from their bigger challenges: how can they 'measure' sustainable development? How can they clarify the contested concept of sustainable development and make territorial considerations about it?

For OECD (1998), an indicator can be generally understood as a synthetic and representative reflection of a greater, more complex sum of phenomena, preferably measurable on a quantitative scale. This definition of indicator, as many others, tends to be based on a 'natural' assumption that indicators are quantitative and operational measures. On the whole, quantitative data is considered as more scientific and therefore more trustworthy and reliable than qualitative data, but good indicators do not have to be quantitative measurements (Miller 2007):

> *"The sense of force that you feel when driving a car around a corner is, for many people, a reliable indicator of whether the car is moving too fast' (…) and it does 'communicate the kind of information necessary for people to make decisions, even though they're not numerical"* (Miller 2007, p.10).

According to Bell and Morse (2001), the more traditional 'technical' perspective of sustainability indicators considers them exclusively as quantitative data, gathered externally and best dealt with by experts: "everything else, by definition, cannot be a sustainability indicator" (Bell and Morse 2001, p.302). However, in principle, an indicator can be either a qualitative variable or a quantitative variable (Gallopin 1997) and in reality it is not possible to quantify many economic, social and environmental issues, for they are either qualitative in nature or involve subjective judgement (Wong 2006). Whilst the majority of the indicators is and will still be quantitative, there are issues that are more adequately understood through the use of "soft" indicators and qualitative information (ibid). When it concerns sustainable development, Lundquist (cited in Mineur 2007) stresses the usefulness of having more qualitative data: not only because using quantitative data to 'define or assess' sustainable development is not enough and potentially neglects certain aspects, but also because insufficient quantitative data can affect the choice of indicators (as well as the choice of the system boundary). Qualitative approaches are therefore useful to capture subjective issues and to complement what is intended (or possible) to measure through quantitative approaches.

A different definition of indicator is proposed by Innes (1990). She says that indicators are a way of reducing uncertainty and extracting simple ideas out of complex ones: they are simply 'a set of rules for gathering and organizing data so they can be assigned meaning'. For her, they create a sense of security about some facts "amid otherwise shifting grounds of discussion and provides a way of improving communication and reaching agreement on some portions of problems" (Innes 1990, p.291). And this is particularly true for sustainability indicators.

The modern era of assessing development progress began in the late 1940s when economic indicators were firstly developed to guide economic decision-making (Hardi and Zdan 1997), mainly in the United States. Based on quantitative figures (of systems of national accounts and annual calculations of gross domestic product, etc.) and periodic publications (such as the monthly Economic Indicators published to measure the reliability of the United States Economy), they have been widely produced since that time (Wong 2006). Economic indicators comprise decades of experience, debates and controversies. They are perhaps the most familiar of all indicators – like national income, employment and unemployment, production, economic growth or inflation rate. As a result, there are well-established and well-funded bodies of data and data collection systems, composed of relationships and institutions developed to track the 'economy', that provide guidance and direction for economic policy-making (Hoernig and Seasons 2004).

Social indicators arrived later due to the need of understanding and studying social conditions and change much in vogue during the 1960s (Hoernig and Seasons 2004). The term 'social indicators' was popularised by Raymond Bauer in 1966 and this wave of research was named the 'social indicators movement' by Otis Duncan some years later (Wong 2006). By the 1970s, the 'social indicators movement' resulted in widespread national reporting of social trends by numerous Western countries and international organizations (Hoernig and Seasons 2004) and in the compilation of hundreds of publications (Flood 1997). Interesting to note is that the development and implementation of social indicators raised important conceptual and methodological questions, such as quantification, prediction, causality, validity, availability and reliability of data, the problem of spatial aggregation, interpretation and their relationship with values (Hoernig and Seasons 2004). Furthermore, according to Wong (2006), the failure of researchers to resolve some of these difficulties, together with an increasing interest of governments in the influence of 'free market' rules, contributed to a setback on the development of social indicators in the late 1970s.

At the same time that social indicators were flourishing, the expanding influence of the environmental movement since the mid 20th century have also generated progresses towards greater environmental legislation, assessment, monitoring and evaluation at local, national and international levels (Hoernig and Seasons 2004). Several environmental indicators were proposed, mainly in quantitative and descriptive measures which assessed either human pressures in the environment or environmental conditions (Briassoulis 2001). This is reflected in the emergence of a large amount of literature, which stretches back many years prior to 1992, and calls for the use of indicators as a means of gauging sustainable development (Bell and Morse 2003). Being the dominant economic tool for measuring development progress in society, the Gross Domestic Product (GDP) was especially targeted, and it was gradually attempted to incorporate social and environmental dimensions in its calculation. Several other examples, like 'green supplements' to the national accounts or alternative indexes, such as Physical Quality of Life Index, were developed in the 1970s (Aall and Norland 2005). According to Aall and Norland (2005), the attempt of Galtung and Wirak (in 1979) to develop compound development indicators that address both social and ecological aspects of development could in fact be seen as the first attempt to develop sustainability indicators.

However, as Seasons argues, this traditional indicator grouping was discrete until the 1980s and based on the main categories of economic, social and environmental indicators – developed and applied separately. Afterwards, as one can see in Table 3.1, multi-disciplinary approaches replaced mono-disciplinary approaches (Briassoulis 2001). This situation changed with the arrival of two

powerful integrative conceptual models: sustainable development and healthy communities (Seasons 2003).

The 1992 Rio Conference on Environment and Development was a major boost on efforts to develop indicators for measuring progress towards sustainable development. Since then, greater efforts have been made to construct sustainability indicators at international, national and local levels (Dhakal and Imura 2003). Moreover, the sustainability indicators' movement has become one of the most significant social movements of the last ten years and has attracted technicians, natural scientists, social scientists, philosophers, communities, etc. (Mineur 2007). There are two particularly interesting features of this sustainability indicator boom: an emphasis on the subnational level and the variety of purposes and contexts in which they are being created and used (Rydin *et al*. 2003).

Table 3.1 – Changing nature of indicators

	From	To
Period	1900-1985	1985 - current
Character	Traditional / Discrete	Broadly defined / Integrative
Type	Economic Social Environmental	Economic Social Environmental Sustainable Quality of Life Performance based
Scale	International National Regional Large communities	International National Regional Large municipalities Community Neighbourhood
Data	Quantitative	Quantitative Qualitative
Actors	Tecnocrats	Multiple stakeholders
Process	Top down	Collaborative
Sponsors	Governments	Governments Non-government organisations Communities

Source: Seasons (2003, p.65).

At the local level, hundreds of towns, cities, and counties, initially in the United States and later all over the world, have created sustainability indicator sets identifying and defining particular aspects of sustainability in their community (Walter and Wilkerson 1998, Hart 1999, Gahin *et al*. 2003, Mitra 2003, Hoernig and Seasons 2004, Miller 2007). Innes and Booher (2000) describe this flourishing of practice and research on indicators as 'the community indicators movement' and Wong (2006) stresses that various commentators have written academic research papers that chart the approaches used and the rationale that underpinned these indicators. The 'community indicators movement', boosted by 'Agenda 21', pushed for a participative and 'bottom-up' development of

sustainability indicators to provide solid bases for local decision-making (UNCED 1992, Chapter 40). Many of these community experiences were developed by citizens themselves with their own procedures and generated indicator sets based on their particular needs and circumstances, considering the available resources and the perspectives of the people involved. It involved a good deal of 'trial and error, of learning by doing' (Walter and Wilkerson 1998) and it was sometimes loaded with unrealistic expectations (Sawicki 2002). The next Chapter will focus on this territorial level and explore in more detail some local experiences while trying to understand their contribution to local governance for sustainable development.

At the national level, many countries throughout the world have also established national sustainability indicators, and most of them have been working close with the UN, OECD, the World Bank, the EU or other organisations (some examples will be presented further on). Canada, the United States, the Netherlands (Van Den Burg 2004), Britain (Custance 2002) and Sweden (Mineur 2007) are countries which have made many efforts in developing national sustainability indicators. The 2002 Summit on Sustainable Development in Johannesburg was an important milestone, since many countries developed their own sustainable development strategies and related indicator sets when preparing for this summit meeting. Increasingly, sets of indicators have been established to assess progress towards goals in national plans or strategies for sustainable development (WGSSD 2008). Other endeavours were directed to make adjustments to economic indicators and national accounts, to use purely economic approaches, or to consider the importance of 'human capital' and the impact on human health and welfare of environmental factors, among many other frameworks. Also, specific sets of indicators were developed and are being used for a number of important sectors like agriculture, forestry, energy, water, transport, industry, among others (Gallopin 1997).

From the global international perspective, the United Nations Commission on Sustainable Development (UNCSD) was one of the first international institutions to take the lead, by publishing *Indicators for Sustainable Development: Frameworks and Methodologies* in 1996, but also a number of other institutions, such as OECD, the EU, as well as non-governmental organizations, like the World Resources Institute, the Worldwatch Institute or the International Institute for Sustainable Development, have been working on programmes or frameworks to establish sustainability indicators for the planet as a whole or in a global dimension (see further on).

Currently, the situation around sustainability indicators maps this continuum of independent and uncoordinated development and use of indicators at different levels and by different institutions. There is no consensus around methodologies, not even agreement on conceptual frameworks (Hammond *et al*. 1995). According to Pintér *et al.* (2005), this continuous growth in the diversity of sustainability indicator frameworks and systems may allow growing inefficiencies in terms of our ability to develop and monitor progress towards goals and objectives, where cooperative action is required:

> *"One of the reasons for the limited traction of earlier sustainability indicators coordination attempts may have actually been the strategy that involved, at least initially, command-and-control style attempts to have large sets of sustainability indicators accepted without sufficient consideration of the institutional dimension, underlying statistical infrastructures and the actual use of the resulting information in policy-making*" Pintér *et al.* (2005, p.22).

This is why several different authors (Hammond *et al*. 1995, Kelly and Moles 2002, AmbienteItalia 2003, Pintér *et al*. 2005, Wong 2006, Mascarenhas *et al*. 2010, Tanguay *et al*. 2010, just to name a few) insist that the way forward for sustainability indicators should be based on a stronger harmonisation at different territorial levels and different stages. Bearing this in mind, will the inherent tensions between local and global pressures in the process of developing sustainability indicators reduce, through harmonisation, or increase, with no consensus around frameworks and methodologies?

Other authors (see Bakkes 1997, Dahl 1997, Dhakal and Imura 2003, Miller 2007, among others) alert to the fact that if measures of sustainability are to be globally applicable, they must incorporate sufficient flexibility and they must be culturally and universally appropriate. For Bakkes (1997), for example, indicators must reflect their particular cultural and institutional context and therefore, there is the need to assign significance to the rich variety of indicator sets and to focus harmonization efforts only where comparability is really needed. Furthermore, he argues that different stages of sustainable development policies require different information tools. So, there is a need to channel diversity and at the same time standardize some concepts and methods. Dhakal and Imura (2003) argue in the same way when defending that although a single set of common indicators equally applicable to all nations or cities is obviously not possible, the identification of a few common universal issues (independent of the local situation) in order to provide useful international and interregional comparisons, with the possibility of adding extra particular indicators, is recommended.

The question is: can they be "capable of covering the full spectrum of interest from the 'super powers' to the small island developing states, from indigenous cultures to post-industrial communities, and from high-tech to no-tech situations?" (Dahl 1997, p.78). These are questions that frame current debates on sustainability indicators together with concerns to understand their practical *use* and institutional challenges for sustainable development and the trade-offs between different rationales and approaches.

3.3 .Overview of International and National Sustainability Indicators

This part tries to list and briefly discuss multiple experiences, projects and frameworks that have been created around sustainability indicators at the international and national levels. As it has already been referred, there are thousands of pages on sustainability indicators, analysing and proposing hundreds of indicators for different territorial levels. Therefore, the aim here is only to provide some examples of these initiatives, which set the scene for the experiences at the local level. A first part concentrates on examples of indexes to measure sustainable development; and a second one reviews some examples of frameworks and lists of indicators. For further discussion on the development and progresses of sustainability indicators at this territorial levels see Hass *et al*. (2002), Pintér *et al*. (2005), Ramos *et al*.(2004), Statistics Norway (2006) or Hametnern and Steurer (2007), among many others. There also interesting internet tools, such as the International Institute for Sustainable Development (IISD)'s electronic Compendium of Sustainable Development Indicators (http://iisd.ca/measure/compindex.asp), the online list (http://www.ids.ac.uk/eldis/hot /indicator.htm) of the Institute of Development Studies, Sussex, or the Global City Indicators

Program sponsored by the World Bank (http://www.cityindicators.org/), that try to systematize, publicize and generate debate around indicator projects from the global to the local level.

Table 3.2 presents an overview of some of the most well-known projects on sustainability indexes. They are examples of numerical integration, generating one single value through the form of an index. Different indexes offer different insights and different directions for a more sustainable development, but they share some common features, as we will see.

Table 3.2 – Main Sustainability Indexes

Main Sustainability Indexes	Authors	Date
Stressing the ecological dimension		
Ecological Footprint (EF)	Wackernagel and Rees	1996
Environmental Space	Friends of the Earth, Wuppertal Institute	1994
Environmental Performance Index (EPI)	Columbia University	2006
Environmental Vulnerability Index (EVI)	Jonathan Mitchell (SOPAC)	2004
The Living Planet Index (LPI)	World Wildlife Fund (WWF)	1999
Sustainable Process Index (SPI)	Institute of Chemical Engineering, Graz University	1996
Stressing the economic dimension		
Eco-efficiency (EE)	World Business Council on Sustainable Development	1992
Index of Sustainable Economic Welfare (ISEW)	Daly and Cobbs	1990
Genuine Progress Indicator (GPI)	Cobb	1994
Down Jones Sustainability Index	Down Jones & Company	1999
Stressing the social dimension		
Human Development Index (HDI)	UNDP	1990
Capability Poverty Measure (CPM)	UNDP	1996
More Integrative approaches		
Barometer of Sustainability (BS) (Social and Ecological approach)	IUCN - Prescott - Allen	1997
Environmental Sustainability Index (ESI)	World Economic Forum, Yale Univ., Columbia Univ.	1999
Wellbeing of Nations Index (Social and Ecological approach)	Prescott - Allen	2001
Dashboard of Sustainability (DS)	International Institute for Sustainable Development	2000
Compass of Sustainability	AtKisson Group	1992

Sustainability indexes such as the *Ecological Footprint*, the *Living Planet Index*, the *Environmental Space*, and many others, focus on the ecological dimension of sustainability. The *Ecological Footprint* (*EF*) is worldwide cited and is probably the most well-known of all these sustainability indexes. The term 'ecological footprint', developed by William Rees and Mathis Wakernagel of the University of British Columbia in 1996, is an area-based indicator which quantifies the intensity of human resource use and waste discharge activity in a specific area in relation to the area's capacity to provide for that activity (Wakernagel and Rees 1996). The fundamental concept underlying *EF* is that Earth's land area is finite, whereas the number of humans is increasing and all human activities – and resource use – require land use, primarily biologically productive land. *EFs* have been calculated for 150 countries and published by the World Wildlife Fund (WWF) in 2001 (Aall and Norland 2005) and global results are released annually thereafter as part of the Living Planet Report series. It has also attracted a considerable attention from regional and local levels (see Barrett *et al.* 2004). For a further analysis of the major current debates (critiques, advantages, limitations, etc.) see Moore *et al.* (2007). Some other indicators such as the WWF's *Living Planet Index*, for example, reflect the planet ecosystem in a composite measure of

biodiversity losses in terrestrial, freshwater, and marine ecosystems. Another example is the *Environmental space*, defined by the Wuppertal Institute in co-operation with Friends of the Earth Europe as 'the quantity of energy, water, land, non-renewable raw materials and wood that we can use in a sustainable fashion'. This concept also intends to show that we are exceeding our environmental space for these resources, if our use-rates cannot be reconciled with ecological sustainability and equity (see http://reports.eea.europa.eu/92-9167-078-2/en/page003.html).

There is another group of indexes which emphasises the economic side of sustainable development, such as *Eco-efficiency*, *ISEW, Genuine Progress Indicator (GPI)*, and many others. The term *Eco-Efficiency* was coined by the World Business Council for Sustainable Development in 1992. It is based on the concept of creating more goods and services in the economy while reducing environmental impacts by using fewer resources and creating less waste and pollution. It is an index particularly designed to be used by companies or institutions. Another one is the Daly and Cobbs' *ISEW* – that later in 1995 evolved into the *GPI* to increase public appeal – which combines ecological factors with statistics on income distribution, capital growth, value of household labour, and public expenditures on health and education. This work has illustrated how human welfare has declined over the past 20 years, while the GDP has continued to rise (Pinfield 1996 and 1997a,b, Bossel 1999, Mayo *et al*. 1997). In the *GPI*, the GDP is corrected by including social debilities and the value of unpaid services (Bossel 1999) in the equation. More recently, the *GPI* has been labelled as *Sustainable Net Benefit Index* to reflect its theoretical underpinnings (Lawn 2005).

The most well-know example for sustainability with an emphasis on the social dimension is the *Human Development Index* (*HDI*) devised by the UN Development Programme in 1990 and released annually thereafter. *HDI* focuses on human and social development, mainly on longevity, knowledge and decent living standards (Moldan 1997), providing a different viewpoint for human progress and the complex relationship between income and well-being (Mineur 2007). The *Capability Poverty Measure* (*CPM*) was developed in 1996 in the second Human Development Report as a way of better monitoring human deprivation, focusing on poverty in terms of lack of basic capabilities (McKinley 1997).

The index approach remains crucial for more integrative approaches, like the *Environmental Sustainability Index,* the *Wellbeing Index*, *Compass of Sustainability*, the *Dashboard of Sustainability* or the *Barometer of Sustainability*, with strong visual approaches and different levels of disaggregation. The *Environmental Sustainability Index* was first developed in 1999 and it aggregates environmental, socio-economic, and institutional indicators as a means to assess sustainability (Esty *et al.* 2005, Wilson *et al.* 2006). The *Wellbeing Index* was developed by Prescott-Allen in collaboration with the International Development Research Centre and the World Conservation Union and the first results for 180 countries were released in 2001 (Wilson *et al*. 2006). It evaluates human and ecosystem wellbeing, comprising indicators of health and population, household and national wealth, knowledge and culture, community, and equity for human wellbeing and land, water, air, species and genes and resource use for ecosystem wellbeing (Prescott-Allen 2001). The *Compass of Sustainability*, developed by Alan AtKisson and R. Lee Hatcher, is based on the metaphor of a compass with four quadrants that provide orientation towards sustainability: N = Nature, E = Economy, S = Society and W = Wellbeing. It expands the Triple Bottom Line accounting approach (that focuses on environmental, economic and social issues) by separating and making explicit society and wellbeing considerations. It is

seen as an adapted and simplified educational tool for organising thinking about issues related to sustainability. This tool was developed from extensive research and application over 15 years (see www.atKisson.com) and it developed in 1998 into the *Dashboard of Sustainability*. It was refined and redesigned to be an appealing visual instrument of sustainability indicators, providing an easy way of understanding main messages. It has been developed by the IISD and the Consultative Group on Sustainable Development Indicators to be a free, non-commercial software package that illustrates the complex relationships between economic, social, environmental and institutional issues. The new edition promotes the Millennium Development Goals indicators - especially for developing countries (see http://www.iisd.org/cgSI/dashboard.asp). It draws an analogy between a vehicle dashboard with all its dials and lights and sustainable development, with separate dials and warnings lights (from positive trends or green lights, to yellow cautious warnings, to red negative signs) for the four dimensions of sustainable development considered (Bell and Morse 2003). Another visual approach is the *Barometer of Sustainability* developed by Prescott-Allen in 1997. It involves a two-dimensional graphic which maps the particular state of human and ecosystem wellbeing from bad to good conditions (Bossel 2000). Judging from the diagram, the reader cannot discern why a system happens to occupy the location it does in the barometer. Therefore, it does not allow any disaggregation (Bell and Morse 2003).

An interesting comparative study of three widely applied sustainability indexes (*Ecological Footprint*; *Dashboard of Sustainability*; and, *Barometer of Sustainability*) was carried out by Van Bellen (2005) and it summarizes the main comparative features of all indexes for sustainability: (i) they emphasise different issues of what drives or constitutes sustainability; (ii) they can be applied to different territorial levels; (iii) their construction involves complex weighting schemes (the used data is quantitative); (iv) they are mainly top-down oriented with little or no participation at all from actors other than experts; and, finally (v) they are simple to present and to capture attention with high visual impact.

Concerning the development of frameworks to organise and choose sustainability indicators (see further on) and the design of more or less extensive lists of indicators to assess sustainability, different international organisations and different countries and national governments have been playing a crucial role, as it was already mentioned before.

OECD has been one of the major international actors in the development of indicators for sustainable development. Its work has focused on developing several sets of indicators responding to specific policy questions (like resource indicators, outcome indicators, indicator sets focusing on individual aspects of sustainability, etc.); on using these indicators in policy analysis and country peer reviews (environmental performance reviews, economic surveys, etc.); and on reviewing and further developing frameworks and statistics that could best support the measurement of sustainable development and the calculation of indicators (Giovannini and Linster 2005). The *Pressure-State-Response* (*PSR)* framework is probably the most well-known conceptual framework and the most widely used. It was developed by OECD from an earlier work by the Canadian government to present a core set of environmental indicators to be applied to the national, sectoral or community level (OECD 1993, Hammond *et al*. 1995). It classifies indicators according to their functions and roles in the decision-making process. According to Dhakal and Imura (2003), it provides a very logical way of conceptualising the chains of cause and effect between human activities and our environment and resources. Several extensions of this model have been offered through different forms: some include another category of impact indicators

(pressure-state-impact-response model); others replace the pressure category for the dimension driving-force; while others consider the driving force as generating pressure and thus create the more complete version of the model: *Driving force-Pressure-State-Impact-Response* (*DPSIR*) (Bell and Morse 2003). For instance, the *DPSIR* model works as a framework for different projects, as for example, the Environmental Pressure Indices Project of Eurostat, the work of the European Environmental Agency, etc.

The UN has also been a crucial organisation for sustainability indicators, stimulating several international and national initiatives (see for instance UNDSD 2006). In 1996 the UN Division for Sustainable Development (UNDSD) developed a list of 134 indicators of sustainability, which applicability has been tested in several countries (Parris and Kates 2003, Fuchs 2006). Approximately 22 countries started testing the 1996 set, including countries in Africa (Ghana, Kenya, Morocco, South Africa, Tunisia), Asia and the Pacific (China, Maldives, Pakistan, Philippines), Europe (Austria, Belgium, Czech Republic, Finland, France, Germany, United Kingdom) and the Americas and the Caribbean (Barbados, Bolivia, Brazil, Costa Rica, Mexico, Venezuela) (UN 2001). This work often showed that some of the proposed indicators were not that well oriented towards national needs. One result was that countries started developing their own sustainable development indicator sets. Switzerland, the United Kingdom, Germany, Sweden, and Belgium, to name a few in Europe, were some of the first countries to establish indicator sets in the late 1990s. Since then, the regular publication and revision of these sets in connection with national sustainable development strategies have been part of these countries monitoring of national sustainability (WGSSD 2008). The United Kingdom has perhaps the longest experience with indicator sets connected to policies: the first one was published in 1996, the second in 1999, and the third in 2005 and since then updates have been disclosed annually (ibid.).

A joint UN, OECD and Eurostat Working Group on Statistics for Sustainable Development (WGSSD) was established by the Conference of European Statisticians in 2005 with the support of the World Bank, Canada and Norway. The central mandate of this working group is to develop a theoretical and conceptual framework and to structure the work on indicators better than it has been done so far, or in other words, to provide the 'desired' greater international harmonisation of sustainability indicators. Thus, this working group is developing a capital framework for a small set of sustainability indicators, based on real (or produced), natural, human and social capital, that intends to become the core set for international comparison (see WGSSD 2008).

At the European Level, and parallel to this Eurostat joint work, the European Commission (EC), the Eurostat and the European Environmental Agency (EEA) have been developing major efforts to define and collect indicators to develop Environmental Indicators, Environmental Pressure Indices, Urban Audit indicators, Structural Indicators, among others (Wong 2006). Also, with the approval of the European Sustainable Development Strategy in 2001, the EC has focused on the design of a 'framework for indicators based on themes and sub-themes, which are directly linked to EU policy priorities' (EC 2005). As a result, the Commission endorsed in 2005 a set of 155 indicators (in the form of a hierarchical three-level pyramid), with 98 indicators forming the basis of Eurostat's first sustainable development monitoring report published in December 2005 (Eurostat 2005). Following the mandate of the renewed EU SDS, the review of the 2005 EU sustainability indicator set was carried out by Eurostat in close cooperation with a group of national experts, known as the 'Sustainable Development Indicators Task force'. This working group was established in order to 'exchange and expand best practices to all Member States' (Eurostat 2007). The revised EU

sustainability indicator set was published in October 2007 in the annex to the Commission Staff Working Document accompanying the first progress report of the 2007 EU Sustainable Development Strategy (SDS) (EC 2007a). It also presents the state of the art on national sustainability indicators at the EU level (see Hametnern and Steurer 2007). Some of the conclusions were that: (i) sustainability indicator sets across Europe differ strongly in size: while some countries have a small set with about 20 (headline) indicators, others use rather comprehensive sets with more than 100 indicators; (ii) few countries also use aggregate indices; (iii) sustainable development objectives are more coherent than sustainability indicators and the degree of coherence varies not only between countries, but also between topics and themes; (iv) and, as most countries have developed their national sustainability indicator set before the 2005 EU sustainability indicator set, which was renewed in 2007, it can be expected that many of them will be revised in the next few years along with their overall sustainable development strategy objectives. Also in Europe, parallel efforts have been made to develop sustainability indicators, as well as to harmonise indicator sets, for the local level, but we will come back to this in the next Chapter.

To finish this part, it is worth mentioning an interesting study of 36 different international and national initiatives of sustainability indicator sets (27 developed by countries and 9 by international organisations), carried out by the Portuguese Environmental Agency and the New University of Lisbon (see APA 2007). Their main conclusions were that: (i) the majority of sustainability indicator sets develop a list of indicators at the expense of one single index; (ii) they are related to the National Strategies for Sustainable Development (NSSD), in the sense that they include indicators to monitor the goals/themes/areas considered strategic for their country's sustainable development; (iii) indicators are frequently organised in accordance with the several dimensions of sustainability (economic, social, institutional, environmental, and sometimes cultural) or with the themes/goals of NSSD; (iv) they adopt analytical models to support the division of indicators into the four main dimensions of sustainable development, but quite a few of them do not use any conceptual formal model; (v) they include less than 50 indicators (ranging from 6 to 155 indicators); (vi) they select a short list of headline indicators to facilitate communication with top policy-makers and the public in general; (vii) data is annually collected and publicised; (viii) and several initiatives to develop the indicator system include workshops, seminars, meetings, public consultation and participations etc., but the vast majority of them do not refer to the development process, not allowing an accurate conclusion about it.

According to Giovannini and Linster (2005), while the initiatives taken so far can show some common elements, there is great variability across organisations and countries considering the whole of indicator sets and measurement tools developed, the choice of the individual indicators included in the core sets, the level of integration of different information sources, and the conceptual foundations for statistical measurement, as well as the distinct impacts and effectiveness on policy debates.

3.4. Sustainability Indicators Through Different Angles: Methodological Considerations

According to Hezri and Dovers (2006), there have been many attempts to develop better information systems and indicators to improve decision-making in public administration studies,

urban studies and environmental sciences, for instance, for a long time. They argue that in public administration studies, the idea of evidence-based government has provided further impetus to the proliferation of 'performance indicators' to inform policy delivery and development (Solesbury, cited in Hezri and Dovers 2006) and to generate public debate, especially in relation to key issues such as sustainability and the way government policy affects outcomes, which means the start of what Wong (2006) calls an *information intensive governance regime*. Also in urban studies, and particularly in the environmental sciences, this search for better methodologies, for the most appropriate and best indicators has been predominant. This underlines the multiplicity of debates that has been focusing on the improvement of information systems to decision-making.

Particularly for sustainability indicators, the distinct approaches to them (the 'technical', the 'participative' and the 'governance') reflect major divergences in the roles, functions and characteristics of the indicators, in the diversity of methodological considerations, and/or in the diversity of uses and outcomes they underline or strive for. Therefore, the next sections aim to explore more carefully these differences and to confront perspectives on indicators, in order to understand the implicit and explicit considerations behind each one. While in this Chapter the two more explored perspectives in the sustainability indicators literature are emphasised, the next one intends to focus on the 'governance' perspective at the local level.

3.4.1. Different Roles, Functions and Characteristics

As Mineur (2007) observes, the complexity of assessing sustainable development and the multiple interpretations of how to act towards sustainability in the best way, tends to generate different types of indicators with different roles or functions. When analysing the diversity of roles attached to sustainability indicators, we can recognize the influence of the 'technical' (or 'expert-oriented') and the 'participative' (or 'citizen-oriented') approaches and their perspectives.

Table 3.3 – Different roles for sustainability indicators

Objective setting and comparison
▪ Help to set sustainable development policy goals (and point possible solutions);
▪ Identify/diagnose current conditions and trends;
▪ Allow comparison across time or space;
Technical and managerial
▪ Inform planning and decision-making with early warning information allowing to anticipate future conditions and trends;
▪ Monitor (measure) progress towards sustainable development policy goals and targets;
▪ Assess performance of units (ideally suited for performance measurement at the local level) and enable allocation of resources (when they are attached to programmes or projects in which financial support depends on their evolution);
Public communication and participation
▪ Raise awareness, educate and encourage behaviour change;
▪ Improve communication with the public or selected groups;
▪ Encourage public participation and motivate civic action;

Source: Adapted from PASTILLE (2002).

The literature review on it has pointed to this long list of roles or functions for sustainability indicators. Following up close the classification proposed by the work of PASTILLE (2002), they can be summarised under three broad headings (Table 3.3).

According to PASTILLE (2002), the 'expert-oriented' literature on sustainability indicators suggests that the design of those indicators should fit the intended purpose (e.g. an indicator designed for the purpose of public communication will not be suitable for assessing the performance of a governmental agency), should address a specific audience and should involve that audience in the development process (Figure 3.1). Such involvement is associated with higher degrees of awareness and commitment (Levett 1998, Holland 1997, Jesinghaus 1999).

Figure 3.1 – The 'expert-oriented' process of indicator development

Source: Pastille (2002, p.11).

Supporters of this approach, such as Brink (1991), Gallopin (1997), Hammond *et al.* (1995), Brugmann (1997a and b), Moldan *et al.* 1997, Guy and Kibert (1998), Walter and Wilkerson (1998), Jesinghaus (1999), Schlossberg and Zimmerman (2003), Scipioni *et al.* (2009), Niemeijer and de Groot (2008), among others, underline that the major functions of sustainability indicators are related to the assessment of conditions and trends, to the comparison across places, situations and time, to the structure and assessment of conditions and trends in relation to goals and targets, to the supply of early warning information and to the anticipation of future conditions and trends. Those roles can be labelled under the 'objective setting and comparison' and 'technical and managerial' groups, as seen in Table 3.3.

As for the 'citizen-oriented' approach, functions such as the understanding of particular contexts or the development of collaborative processes around the indicators are far more important than indicators *per se,* enabling learning opportunities for different stakeholders (Bell and Morse 2001; Astleithner and Hamedinger 2003). Several authors stress that indicators can play a significant role in the understanding of people's values, needs, concerns, and expectations and therefore can raise awareness and enable behavioural change (Kline 2000). As a tool to encourage public participation (Hoernig and Seasons 2004), they can guide development decisions and gain support for collective desired actions as well as improve or create new communication channels with the population or non-state actors (Rosenström *et al.* 2006; Rosenström and Kyllönen 2007). Therefore, this approach tends to concentrate or emphasise the major roles for sustainability indicators under the 'public communication and participation' heading (Table 3.3).

The main different characteristics between these two approaches are summarized in Table 3.4, where an attractive and synthetic picture depicts how they distinctly assume diverse purposes for sustainability indicators, what they consider more important to measure, in what type of political-administrative contexts they emerge, who they consider to hold major responsibilities on their development, as well as who should participate, what are the target audiences and how indicators should be presented.

Notwithstanding this division in the relevant literature, several arguments have been sustaining that there is an almost inevitable increasing number of examples of 'cross-fertilization' of ideas from these two approaches (Reed *et al.* 2005, 2006), meaning that the convergence between these two approaches is becoming common, in practice and in theory. This convergence is clear when those roles are conjointly considered and taken as equally important, and when the decision on 'who participates' and 'who decides' incorporates scientific concerns together with public participation and communication concerns[1]. The aforementioned convergence is also present in the evolution of the criteria that support the choice of sustainability indicators or other methodological issues, as we will see in the next section.

Table 3.4 – Approaches to indicator development and their characteristics

Characteristics of the indicators	Citizen oriented	Expert Oriented
What do they measure?	Local changes clearly linked to individual behaviour	Global/National changes on a more aggregated level
For what purpose?	Promote understanding of sustainable development; encourage individuals to make changes in their day-to-day lives; drive local policy	Measure effectiveness (performance assessment); directly drive policy; international comparison
What political-administrative context?	Networks, governance	Formal hierarchies in governmental institutions
Who is responsible for their collection?	Community	Experts
Who participates?	Broad range of actors	Limited range of actors
What is the intended audience?	The public/Policy-makers	Experts/Policy-makers
How are they communicated?	The media and other means	Extensive within manager groups/policy-makers; more limited with other groups

Source: Adapted from Eckerberg and Mineur (2003) and Bell and Morse (2003).

3.4.2. Different Methodological Aspects

Having addressed the different characteristics and roles of sustainability indicators, it is important to analyse some methodological questions around their development. What are the methodological implications of sustainability indicators? Do they limit both approaches? Many other questions posed by Bell and Morse (2003) seem to raise several doubts and concerns about the methodological complexities of developing sustainability indicator sets:

> *"What indicators should one select? Who selects them? Why are they selected? What are they meant to help to achieve? What about the balance between the various dimensions of sustainable development? How are the indicators to be measured? How are the indicators to be interpreted, and by whom? How are the results to be communicated, to whom and for what purpose?"* (Bell and Morse 2003, p.17).

[1]See for example the experience with the development of sustainability indicators on the Island of Guernsey as explored by MacAlpine and Birnie 2005, and briefly examined in the next Chapter.

Those authors point out as well that there are almost as many answers to these questions as there are indicator projects. The actual delivery of sustainability indicators, regardless of the approach chosen for their development, is dependent on or at least limited by several methodological issues and dilemmas that should be considered. According to Dhakal and Imura (2003) most of the methodological debates in sustainable indicator systems are about top-down vs. bottom-up approaches, context specific indicators vs. global common indicators, quantitative vs. qualitative indicators, and, indicators measuring process vs. outcomes. We have already paid attention to some, while others are going to be discussed in this section. However, it is necessary to alert and underline that most of these issues and dilemmas are not specific of sustainability indicators. Problems in defining the concept to be measured, problems of aggregation or simplification or even about the best methodology to use are not exclusive of sustainability indicators. They derive from similar problems when using economic indicators, social indicators and environmental indicators individually. As demonstrated before, the operationalisation of social indicators has prompted several methodological problems (namely quantification, prediction, causality, validity, availability and reliability of data, spatial aggregation, interpretation and indicators relationship with values). Regarding economic indicators, Wong (2006) presents several examples of these problems: the constant revision of methods for collecting and reporting key economic statistics, such as employment and unemployment, which is deep-rooted and well documented; the trade-off between the amount of data available and the use of more appropriately defined spatial units (crucial for a great part of economic indicators); the ambiguity over the causal direction of explanation is not only a sustainable development restrictedness (for economists, it is also widely recognised that rapid economic growth can co-exist with unemployment within the same urban space, although it would not be apparently expected); etc. Furthermore, the timeframe required to establish the relationship between different activities is sometimes insufficient for statistics in general and it is also difficult to find solid indicators (performance indicators, sustainability indicators or others) that can measure the direct policy output of spatial planning policies, for instance.

Nevertheless, sustainability indicators tend to stress all those dilemmas and problems as they attempt to combine the different economic, social, environmental and institutional dimensions and therefore their different indicators.

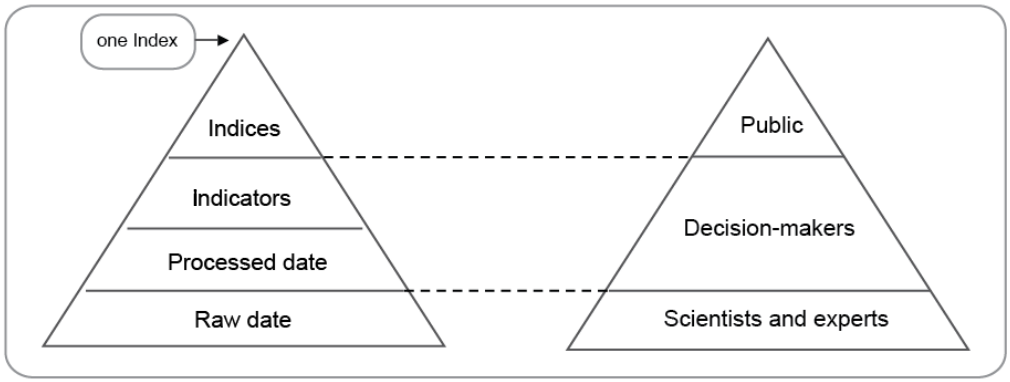
Quantitative indicators *per se* occupy a particular position in the 'information pyramid' which is composed by primary analysed data, indicators and indices (see Figure 3.2) (Hammond *et al.* 1995). Indices are on the top of this pyramid and are restricted in number.

The pyramid of Hammond *et al*. (1995) (represented in the left pyramid of Figure 3.2), widely cited in the sustainability indicators literature, was criticised by Gallopin (1997) for not being totally correct. His argument was that the distinction between indices and indicators lies in the complexity of the function by which they are obtained and not in their hierarchical level. Essentially, he argues that on the top of the pyramid should be one single index, which is the most aggregated form of information. Notwithstanding this debate, this 'famous' pyramid is useful for the purposes of this section.

One of the oldest methodological disputes in indicator theory in general concerns the aggregation of indicators into one index (Jesinghaus 1999). Opinions diverge between having a single index for sustainable development and a set or list of several indicators. There are those who defend the potentialities of one single index and those who warn about its risks and dangers (Bell and Morse

2003). Without intending to explain all the arguments pro and con aggregation, some topics must be highlighted in order to better recognize the reasons why sustainability indicators researchers are divided into two different opinions. Some recognise the need to have a list or set of indicators (with or without headline indicators), usually supported by a conceptual framework, and others emphasise the benefits of defining one single index to measure sustainable development.

Figure 3.2 – 'The Information Pyramid' and its potential users



Source: Adapted from Hammond *et al.* (1995) and Braat (1991).

Some authors argue for the positive aspects of developing a highly aggregated indicator. The argument of Hammond *et al.* is that highly-aggregated indices are more effective in such a way that, if all the assumptions and sources of data are clearly identified, and the methodology is explicit and publicly reported, the index can readily be disaggregated into its separate components and therefore no information is lost (Hammond *et al*. 1995). Moreover, they have several other advantages: they tend to be more appropriate to provide a synoptic overview of issues at a higher spatial scale (Wong 2006); they have the potential to raise debate and awareness – instead of statistical support to decision-making (Bartelmus 1999, OECD 1998, Jesinghaus 1999). Furthermore, they can easily capture the media attention (Jesinghaus 1999); they allow establishing rankings, comparisons across time and space and assessing progress in general terms. The biggest advantage of an index is that it simplifies complexity into a single value into an easy-to-communicate and compact form that can readily instigate debate and further research: 'the index format can assist in delivering a big-picture understanding of the issue of sustainability in a matter of minutes' (Scholossberg and Zimmerman 2003, p.653). Braat (1991) has the opinion that indexes are preferable for the public in general because they convey unambiguous messages, free of redundancy and in a single piece of information. As for other users, Braat considers that policy-makers prefer less aggregated data that can be related with policy objectives, evaluation criteria and targets. Finally, professional analysts and scientists prefer raw data which can be analysed statistically (see the right pyramid in Figure 3.2).

On the other hand, there are several researchers that stress the technical disadvantages and dangers of an aggregate approach to sustainable development. In the first place, the technique used to aggregate data is always contentious and driven by value judgements of the analysts or the experts, and it involves all sort of mathematics from the simple to the complex (Dahl 1997, Bossel 1999, Jesinghaus 1999, Bell and Morse 2003, Munda 2005, Wong 2006, among many

others). Aggregation methods offer the possibility of hiding deficits in some sectors, which may threaten the whole system (Bossel 1999).

> "*The weighting scheme used to combine different indicators is indeed very similar to a cooking recipe that specifies the quantity of different ingredients to make a dish. It is always intriguing how the taste of the dish can dramatically change by simply varying the relative proportion of each ingredient used. The logic and consequence of varying cooking ingredients applies when devising a weighting scheme to combine individual indicators*" (Wong 2006, p.81).

Therefore, aggregation schemes can be object of distorted interpretation and can also cause misrepresentation (Meadows 1998, Innes and Booher 2000, Wong 2006) mainly when they add 'apples and oranges', i.e. items that cannot be measured in the same units (Bossel 1999). According to Innes and Booher (2000), they combine so many concepts that it is difficult or impossible to identify what is problematic or needs policy attention. The lack of transparency to the general public (Dahl 1997, Munda 2005), mainly at the communication level (Bell and Morse 2003, Jesinghaus 1999), is also another disadvantage that can undermine an index potential. Henderson (cited in Bell and Morse 2003, p.44) states that only "transparent and tangible indicators that people can readily understand and visualise and relate to their own lives will provide the desired political constituency for needed governmental policy". Furthermore, indexes are less responsive to pinpoint issues at lower territorial levels and this is why one can find sustainability indicator sets, comprising a broad range of indicators, particularly in local communities (Wong 2006). One last issue concerns the recognition of the limited knowledge about the existence of linkages in socio-ecological systems (Gallopin 1997), that remains true for the use of lists of indicators, but which has severe complications when using one single index. Briassoulis (cited in Hoernig and Seasons 2004, p.87) notes that the "understanding of interdependencies between the three sectors is often very weak. Frequently, sustainability indicators lack explanatory power, failing to identify causal factors, including agents, mechanisms and processes of change". She also observes the difficulties in establishing appropriate targets, due to uncertainty and lack of consensus among decision-makers and argues therefore for the need for disaggregated indicators.

As a consequence, many approaches to sustainability indicators have put the emphasis on the development of more or less extensive lists of different indicators. Those lists are also not exempt from criticism, particularly because sometimes they derive from *ad hoc* observations without a theoretical framework supporting them and can be overly dense in some areas and sparse in others (Bossel 1999). This is why several authors recognise the need to organize indicators in a consistent framework – a practical set of principles and rules that allows the selection of a limited list of sustainability indicators in a coherent and consistent manner. Ramos *et al.* (2004) argue that building such a framework ensures that indicators serve the purpose for which they are intended and controls the way they are selected and developed (we will come back to this further on). Another critique, with particular relevance for the local level, is that a "broad and 'all-purpose' indicator report is extremely expensive and is not usually repeated (becoming quickly out-dated). It may provide rhetorical points for some, but typically influential decision-makers do not read it, much less act based on it" (Innes and Booher 2000, p.176). For Innes and Booher (2000), most of these indicator projects are locally developed by the input of communities and are typically not built on technical experience, or present no effort to use technical information of public policy over the last 50 years. Therefore, very few indicators have had significant impacts on public action.

Nevertheless, judging from the few successful cases, Innes and Booher (2000) argue that indicators were not the most important element, but what key players learned and the way they evolved during the course of the indicators development.

Another growing tendency in the 'measurement' of sustainable development has been the search for other methods to simplify the structure the list of indicators by using headline or flagship indicators, which groups indicators in bundles, applies summary score systems and uses multi-dimensional presentation methods (Wong 2006). The general conclusion is that each method has different implications (positive and negative) for different target groups.

A growing variety of frameworks to organise and choose indicators is also a current issue. Ramos et al. (2004) argue that many of them are quite similar in their methodological approaches and are mostly adaptations of the PSR model (seen above), proposed by OECD (1993) and based on causality chains. They present a deeper comparative study of the evolution of the different frameworks, from mere environmental systems assessment to environmental performance of organizations or sectors, or project evaluation (see Ramos *et al*. 2004). For Pintér *et al.* (2005, p.5) these frameworks differ mainly in "the way they conceptualize the main dimensions of sustainable development, the inter-linkages between these dimensions, the way they group the issues to be measured, and the concepts by which they justify the selection and aggregation of indicators." According to Giovannini and Linster (2005) there are two broad categories of frameworks that are used to select indicators:

(1) *Conceptual frameworks* - they reflect the integrated nature of sustainable development, while organising the core indicators in a useful way to decision-makers and the public, and encouraging the use of combined sets of sustainability indicators in the overall policy debate (Giovannini and Linster 2005, p.7). According to APA (2007), five main groups of frameworks can be found in this category: (i) economic frameworks; (ii) pressure-state-response (PSR) frameworks, and its variations; (iii) capital frameworks; (iv) frameworks of human well-being or ecosystem well-being; (v) issue - or theme - based frameworks.

(2) *Statistical frameworks* – "they help to ensure that the statistical basis is good enough and sufficiently coherent to allow basic data sets covering different aspects to be linked together. They are particularly useful for continued systematic and long-term efforts to improve the availability and quality of the basic sets from which the indicators can derive, and that can be used to support further in-depth analysis" (Giovannini and Linster 2005, p.7). Capital-accounting based frameworks, centred on the economic and environmental pillar of sustainable development, are an example. They can act together with conceptual frameworks. The System of Integrated Environmental and Economic Accounting or *SEEA* is one of many attempts to adjust conventional systems of national accounts to include natural values (*greening* the national accounts) and was first published by the United Nations Statistical Office in 1993 (Hammond *et al.* 1995).

However, Reed et al. (2006) argue that most of the frameworks can be divided according to the sustainability indicators perspective they represent (see their review of methodological frameworks for developing and applying sustainability indicators at a local scale). As such, expert-led approaches tend to draw their attention to the aforementioned frameworks. On the other hand, the citizen-oriented approach is based on process-related frameworks, aiming to improve the process

of developing sustainability indicators and are not concerned just with the 'design' of a particular indicator (see for instance Bell and Morse 2003's Soft Systems Analysis or an interesting recent proposal of Ramos and Caeiro 2010 for a conceptual framework aiming to design and assess the effectiveness of the sustainability indicators themselves - where stakeholder involvement is an essential element – in order to improve guidance, objectivity and transparency in sustainability assessment processes). These concerns led at the international level, for instance, to the formulation of the well-known Bellagio principles. The Bellagio principles were developed by an international group of experts at a meeting held in 1996 in Bellagio, Italy and were designed as guidelines for establishing indicators of sustainable development – from their selection and design to their interpretation and disclosure – at all territorial levels, from the community to the international level (Hardi and Zdan 1997). The ten principles reaffirm the importance of effective communication, broad participation, and institutional capability in the creation of sustainability indicator sets (see Table 3.5).

Another example of a process-related framework specifically for the local level is cited by Mineur (2007): the PICABUE framework. It was designed in the UK in the mid 1990s and its name derives from the seven principles it establishes: to agree on **P**rinciples of sustainable development and on the objectives of the indicator system; to identify the **I**ssues of concern; to **C**onstruct and select indicators for those issues; to **A**ugment those indicators; to modify indicators to address **B**oundary issues; to develop **U**ncertainty indicators; to **E**valuate and review final sustainability indicators (ibid.).

Table 3.5 – The Bellagio Principles

Summary of the Bellagio Principles for gauging progress towards sustainable development	
1. Guiding Vision	What is meant by sustainable development should be clearly defined (clear vision and goals).
2. Holistic Perspective	Sustainable development should be understood in a holistic perspective, including economic, social and ecological components
3. Essential Elements	Notions of equity and disparity should be included in any perspective of sustainable development involving concerns such as access to resources as well as human rights and other non-market activities that contribute to human/social well-being.
4. Adequate Scope	Time horizon should capture both human and ecosystem time scales and space dimensions should include not only local but also long distance impacts on people and ecosystems.
5.Practical Focus	Progress toward sustainable development should be based on the measurement of a limited number of indicators based on standardized measurement to allow comparison.
6. Openness	Methods and data used for assessment of progress should be explicit, open and acessible to all.
7. Effective Communication	Assessment of progress should be designed to address the needs of the intended audience and set of users and should be effectively communicated to all.
8. Broad Participation	Broad participation of key grass-roots, professional, technical and social groups as well as of decision-makers is required.
9. Ongoing Assessment	Repeated measurement to determine trends and adjustment of goals, frameworks and indicators are needed to promote collective learning and feedback.
10. Institutional Capacity	Instititutional capacity for data collection and treatment is needed to monitor progress. Clear responsabilities and ongoing support should be assured.

Source: Adapted from Hardi and Zdan (1997).

Finally, another methodological concern involves the selection of the most appropriate criteria to choose and create a 'good' indicator. The literature review on the technical approach to sustainability indicators (see Hammond *et al* 1995, Guy and Kibert 1998, Meadows 1998, Jesinghaus 1999, IISD 2000, Cartwright 2000, Block and Van Assche 2001) provides a considerable list of criteria to guide the selection of a 'proper' indicator in order to avoid or minimise methodological constraints and to provide valid and objective information:

- *Availability of (affordable) data*- is good quality data available at a reasonable cost? Information tends to cost money or at least time and effort from many volunteers (IISD 2000);
- *Relative ease of collecting data* - is it feasible to initiate a monitoring process that will make it available in the future? Is the indicator verifiable and reproducible? (IISD 2000);
- *Scientific validity and reliability*- is the indicator a true reflection of the facts? Was the data collected using scientifically valid measurement techniques? Methodological rigor is needed to make the data credible for both experts and laypeople? Will you get the same result if you make two or more measurements of the same indicator? Would two different researchers arrive at the same conclusions? (IISD 2000);
- *Simplicity and ease of understanding* - can the information be presented in an easily understandable and visually attractive way to the target audience? Even complex issues and calculations should eventually present clear information that the public understands (IISD 2000);
- *Limited in number* - manageable to handle;
- *Related to a reasonable time horizon and to a relevant spatial area* - is time-series data available, which reflects the trend of the indicator and allows to visualize the direction the community may be going in the near future? Can the indicator detect a small change in the system? (IISD 2000);
- *Capable of relating to other indicators and capable of aggregation* - is the indicator about a very narrow or broad sustainability issue? (IISD 2000);
- *Transparent and accountable*– can a layperson understand what's happening? Does the indicator hide or reveal facts? Does the indicator point at those who should be held responsible? (Jesinghaus 1999);
- *Policy relevant*- can the indicator be associated with one or several issues around which key policies are formulated? Sustainability indicators are intended for audiences to improve the outcome of decision-making on levels ranging from the personal to the entire biosphere. Unless the indicator can be linked by readers to critical decisions and policies, it is unlikely to motivate action (IISD 2000);

When the limitations of the 'expert-driven' approach to sustainability indicators became apparent on their limited appreciation of the role of indicators within local governance processes (PASTILLE 2002), some complex issues were added to these checklists and literature started to investigate and debate what makes a good indicator, based on the social outcomes it achieves (Miller 2007, p.9-10):

- *Participation* - do indicators emerge from a process that engages people in defining and implementing sustainability in their own lives or communities? Do indicators contribute to the creation of new communities or institutions that further sustainability agendas?
- *Meaning* – Are indicators meaningful to people? Do they motivate them to want to change the way things are currently done? Do indicators communicate more than just its factual content?
- *Local Knowledge*– Do indicators mesh with lay people's sense of what is happening in their own lives and the lives of others in their community? Do those who are considered locally knowledgeable concur with its indications?
- *Historical Weight*– Have people had time to get to know the indicators, to learn what their fluctuations imply for their own lives and businesses and to recognize their value as a guide to improve their own and their communities' well-being? Or were plans devised in order to allow this kind of historical conjuncture, perhaps with the opportunity for renegotiation and reconfiguration of indicators?
- *Adaptability and Flexibility*– Communities are unlikely to get indicators just right the first time. As they direct efforts to 'achieve' sustainability, they may acquire new values, learn new things, or find better measurement tools. Is the indicator system flexible and adaptable enough to change too?
- *Institutionalizing Knowledge Production*– Does the process of indicator development lead to the creation of new institutions or the modification of existing institutions that continually produce new knowledge and information about community sustainability issues?

The questions around these late criteria, particularly related to the social outcomes of sustainability indicators, are thus fundamental when investigating the role of indicators in local governance contexts and when considering them as steering mechanisms of governance arrangements towards sustainable development. However, this does not mean that both set of criteria must be considered separately, with isolated goals and 'functions'. In practice, they sometimes do overlap, as well as collide.

It becomes clearer in this short overview how right Bell and Morse (2003) are when they alert for the diversity of possible answers to the countless methodological questions that arise when choosing and developing sustainability indicators. The next section does not raise less questions or debates at the same time that critically questions if all the efforts to build sustainability indicators are worthy. 'Much wanted, less used?' (Rosenström 2009)

3.4.3. Different Uses and Policy Learning Outcomes

While the arguments of the technical approach tend to take as straightforward the relationship between more and better information mechanisms and better policies, the participative approach tends to emphasise how wrong this linear relationship is in practice. Wong (2006) ironically states that the introduction of an evidence-based policy regime is not based on any firm proof that there is a direct relationship between research and policy decisions or between better information and better policies. Hammond *et al*. (1995) agree in the sense that we have been bombarded with large quantities of new (environmental) data that sometimes neither decision-makers nor the public have

been able to easily interpret and use, but they vigorously support an opposite opinion to Wong's argument, stressing that meaningful indicators are efficient agents of change of political attitudes, of debate enlargement and practical action towards sustainable development. These concerns and questions about the type of policy outcomes and the need to understand the extent to which indicators are used or have the ability to influence policy-making are particularly explored by some authors, such as Gudmundsson (2003), Hezri (2004), or Hezri and Dovers (2006) or Rosenström (2009). Following their main arguments, this section of the thesis emphasises the different possible uses and policy learning outcomes of sustainability indicators. It is of most relevance to see if sustainability indicators actually fulfil their stated purposes or serve 'hidden' functions instead, or are simply ignored. Confrontation of official documents and official and formal statements with the informal routines and cultural beliefs of the actors who work with the indicators is, therefore, essential for research on sustainability indicators use and for this study.

Gudmundsson (2003) recognises that it is a challenge to address these difficult questions and proposes in his article a framework to conceptualise the policy use of indicators. Drawing on his work and on the literature of public policy, evaluation research and 'knowledge utilisation', Hezri (2004, p. 366) proposes a more fruitful notion of indicator utilisation for our research, as well as typifies different policy learning outcomes. He conceptualises an interesting taxonomy of five possible indicator uses:

(1) *Instrumental use* – when there is a direct link or linear relationship between indicators and decision outcomes (action and problem solving).

(2) *Conceptual use* – when indicators change a user's understanding of a problem or a situation (enlightenment). Over time, conceptual use may subsequently induce decision outcomes.

(3) *Tactical use* – when indicators are used either as a delaying tactic, as a substitute for action or to deflect criticism. This has little relevance to the substance of the indicator or what it measures.

(4) *Symbolic use* – when indicators are gathered to give ritualistic assurances so that decision-makers maintain appropriate attitudes when making decisions. They are used as a sign or symbol of some other reality.

(5) *Political use* – when the content of indicators becomes ammunition to support a pre-determined position of a user. It is about persuading others to a particular view of the problem and its solution.

In any specific context, different actors may use the same indicators in different ways and towards different ends. Therefore, this classification is only a guide. It does not aim to represent all possible uses (Hezri 2004). In Hezri's article with Dovers (2006), multiple uses and users of a single set of indicators are assumed, but it is argued that the aforementioned typology can help to avoid the danger of only looking at the indicators in a traditional perspective, as policy information tools (like any other information system) strictly for instrumental use of governments.

> *"According to Vedung (1995, p. 47) any empirical study on evaluation should be prepared to look for these and other possible types of uses, rather than to conclude 'no use' if no instrumental use is found"* (Gudmundsson 2003, p.5).

When it concerns *instrumental use*, they argue that policy-oriented indicator systems such as expert based and top-down approaches (like, for instance, performance indicators) are more likely to result in this type of use:

> *"As the probable impacts of such indicator programs include intelligence on the viability of the indicators as a policy tool, or the efficacy of structures of reporting, they can be considered to reside close to the policy decision locus"* (Hezri and Dovers 2006, p.93).

When the content of indicators has clear linkages to government procedures, programmes, plans or targets, indicators may provide a proof of evidence; when they are linked to chains of action or with a specific policy or management decision, indicators may induce objective action in policy elite or government officials. Examples of these indicators are sets that are developed from environmental management schemes, environmental accounting, green procurement, among others.

On the other hand, community based (or bottom-up) approaches to indicator programs or state-of-the-environment reporting are more likely to promote conceptual, tactical or symbolic uses. They are usually aimed at "influencing the social construction of the policy problem and, as such, it is more difficult to identify policy change" (Hezri and Dovers 2006, p.93). Change through *conceptual use* may occur over a period of many years, even though it is a very important effect (Rosenström 2006). Sets of indicators developed from local environmental plans or Agenda 21 processes provide a good illustration of this situation.

> *"Conceptual utilisation may take place for various purposes, but most often in influencing general policy direction and informing community values. In this regard, conceptual utilisation is the main mechanism empowering the role of indicators in enabling a shared meaning, or as discursive elements, in sustainability debates"* (Hezri and Dovers 2006, p.95).

Symbolic use occurs when indicators are used to justify what policy-makers want to do (Rosenström 2006) and to legitimize their actions. It is very close to *political use*. According to Gudmundsson (2003), a particular decision may gain increased legitimacy by using the results of the indicator system, even though the same decision would have been made anyway. It can also be much related to *tactical use* in the sense that ongoing or pending indicator systems are the justification for inaction (ibid.).

As it was already stressed, few studies on sustainability indicators have paid particular attention to their use in local contexts. Interestingly and in accordance with this typology (although focusing only on two particular types of use), Gahin *et al.* (2003) provide an assessment of the effectiveness of five local community sustainability indicator programs in the United States based on *instrumental* (concrete outcomes) and *conceptual* (intangible outcomes) uses of the indicators. Not surprisingly, most outcomes fall within the intangible range of the spectrum or in conceptual uses and concrete results were less frequent:

> *"Raised awareness about concepts such as sustainability, better understanding of community issues, and increased community dialogue were all commonly cited outcomes. (…) Indicators have had dramatic impacts on decision making in isolated*

> *cases, where their message has resonated strongly with particular individuals. (…) In many cases, the data themselves were powerful enough to influence decisions or actions*" (Gahin *et al.* 2003, p.663).

They stress that indicators cannot accomplish, nor are they intended to accomplish, all the change that is desired towards sustainable development, but they are a worthwhile effort to provide a foundation for change (ibid.). Another example of research findings of policy use of sustainability indicators is provided by Rosenström (2006 and 2009), when assessing the potential use of national indicators in Finland. She employs a similar typology of indicator use, defined by Weiss *et al.* (2005), namely instrumental, conceptual, symbolic (the three more common evaluation research use categories), and process and imposed use. She presents the results according to the three first uses, concluding that the greatest potential use of sustainability indicators is symbolic and conceptual, whereas direct or instrumental use is less likely to occur, but stresses that they can be as influential and important as when instrumentally used (Rosenström 2006). Nevertheless, it is important to remember that this particular research was directed to national indicators in one country, not aiming to look at local specificities.

3.5. Concluding Remarks

This Chapter has shown how diverse and complex the approaches to sustainability indicators can be, and how many issues and dilemmas are raised when developing sustainability indicators. We expect too much from these indicators, if we expect them to act, by themselves, as independent tools for sustainable development. After all, indicators are not and can never be 'exact science'; they only 'indicate' and provide a useful lens to identify and highlight interesting patterns of development that deserve further analysis and exploration. The famous quote from Laurence J. Peter provides some sensible advice: "Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them" (Laurence J. Peter, famous educator and writer) (Wong 2006, p.191). This is why we need to consider indicators as "starting places for discussion and exploration of potential action" (Innes and Booher 2000, p.183). Or, like Hammond *et al*. (1995, p.32) affirm, they are tools that, "used with wisdom and restraint, can build support for needed changes and guide actions of governments, international organizations, the private sector, NGOs and other groups toward sustainability".

The words of Miller (2007) could not express better the final thought of this conclusion:

> "*Sustainability indicators construction and use is an opportunity for capacity building for a much larger task, that of identifying, deliberating, reasoning about, and solving collective social problems related to the sustainability of individual and social life. Learning how to accomplish this larger task is what is truly critical for all communities, from the smallest village to humanity in its entirety. A social approach to sustainability indicators is valuable not only because it produces good indicators that are helpful in this larger task but also because the process of carrying out the social approach helps to build capacity for doing sustainability policy well"* (Miller 2007, p.12)

Sustainability indicators have valuable intended and unintended consequences because the process of their development, interpretation and application challenge existing ways of

governance. They can be the engines of political and policy change for sustainable development or powerful tools for helping us to see our lives and our practices in new and productive ways. The process of their development can help to reach progress towards community sustainability and well-being, although in a slow, incremental and sometimes even frustrating way.

The cited question in the beginning of this Chapter, raised by Cecilia Wong, remains without answer after all that has been reviewed here, but certainly a much broader view about these 'policy accessories of the time', their roles, purposes and functions, methodological issues and possible uses and outcomes has been unravelled, which may allow possible new paths for indicators in the future. The next Chapter will guide us through the development and use of these indicators in context, within Europe and Portugal.

CHAPTER 4

EUROPEAN AND PORTUGUESE EXPERIENCES WITH SUSTAINABILITY INDICATORS

"Uncertainty is inevitable in the development and use of [sustainability] indicators. (…) *The transparency of the uncertainties is (…) a precondition for learning processes"* (Hildén and Rosenström 2008, p. 239)

4.1. Introduction

In order to better assess sustainability indicators' room for manoeuvre to change local governance conditions for sustainable development, this Chapter tries to look closer to reported practices within Europe and Portugal regarding the development and use of these indicators. A first part analyses the role of the European Union in the enforcement of these initiatives and summarizes its main efforts to harmonise and structure common indicators at the local level. A second part sketches and compares (as far as possible) the main features of projects on sustainability indicators in some European cities, based on the review of articles published in international journals and on three renowned researches on the matter. This comparative study of local European experiences focuses on the processes of designing the indicators, on the stakeholders involved and tries to assess the scope and function assigned to the sustainability indicators and when possible, to evaluate their actual use and possible impacts on local governance contexts. Particular attention is devoted to the major obstacles, potentials and challenges identified in these experiences, while aiming to sum up key lessons taken from practice. The next part provides a review of the development of sustainability indicators in Portugal at the national and regional levels in order to contextualize the case-studies. The fourth part describes very briefly local governance features in Portugal and provides a general picture of local experiences with sustainability indicators based on the findings of a questionnaire applied to all Portuguese municipalities. The last part summarizes the main points and discloses our conclusions.

4.2. The Harmonization Role of the European Union

As we have discussed in Chapter 3, several authors and international organisations argue for the need of a stronger harmonisation of the choice of sustainability indicators at different territorial levels and at different stages. However, as it was also underlined, this remains a worldwide challenge, and, above all, a challenge between local and global pressures and between contextual and common universal indicators (to provide useful international and interregional comparisons). We found it necessary to briefly recapitulate the most crucial questions of these debates in order to better understand the work of the European Union: Is there a need to harmonize indicators at some territorial levels? What are the benefits? Should the diversity of solutions remain an interesting and productive feature of sustainability indicators?

"*The blossoming of local sustainability indicator sets has provided flexibility for local communities to identify issues that reflect their particular concerns and circumstances. The problem is that these indicator sets are not necessarily compatible and (…) makes it impossible to undertake meaningful benchmarking and comparison of progress*

> *across different spatial scales. There is also an articulated fear that the failure of local communities to grasp the abstract concept of indicators, and certain aspects of sustainability, will lead to the sidelining of these components in the sustainable development agenda. This means that there is an inherent tension between local specificity and global universality in the process of developing sustainability indicators*" (Wong 2006, p.170).

The role of the European Union has precisely been in accordance with these efforts of harmonisation in order to make it possible to create common indicators that can be compared at the local level. Several different projects with this aim have been favoured, embraced and fostered. This harmonisation role has been an expression of the interaction between different levels of action and different actors within different projects, and has especially targeted local contexts. We shall focus on some of the most important projects.

One of the first European projects was named "*Making news for Monitoring Progress*" and was supported by the DG Environment of the European Commission in 1999, for a three year research on community sustainability indicators in 10 cities across Europe (Mineur 2007). It was a very ambitious project that did not last long because of its difficult participative goals:

> *"The idea was to use the media to communicate progress made in sustainable development issues by using indicators, with the purpose of influencing the awareness and behaviour of individuals by showing meaningful measurements that people could relate to their daily lives. Another aim was to involve citizens directly in the process by letting them* [choose the indicators, collect data and] *measure the signs of progress themselves …* [in order to] *become prepared to act and change behaviour with regard to some of the issues (and communicate the results in the newspapers) (Environ, 2000)*" (Mineur 2007, p.23)

According to Mineur (2007) the project was far more ambitious than, for example, the *European Common Indicators* (ECI) project. Regarding this project, and in the Communication on 'Sustainable Urban Development in the European Union: a framework for action' in 1998, the European Commission urged for the importance of integrating local sustainability measures and monitoring methods into its policies and, particularly, to monitor the progress of LA21 (Wong 2006). This initiative involved a partnership of different organisations and levels (from representatives of local authorities and national institutions to expert and research groups) to find comparable indicators at the local level and gain a better understanding of sustainability in local communities across Europe (EC 2000). The rationale that underpinned this project was: to provide complementary indicators to monitor progress among local European authorities, rather than replace existing local, national and sectoral indicator sets, by following the principle of subsidiarity (AmbienteItalia 2003). Ten common local sustainability indicators have been selected out of a list of 1000 potential indicators through a bottom-up process (with the representatives of local authorities) and were presented at the 3rd European Conference on Sustainable Cities in 2000 (ibid.).

Table 4.1 – The European Common Indicators

The European Common Indicators	
1. Citizen satisfaction with the local community	Headline indicator: Average satisfaction with the local community
2. Local contribution to global climate change	Headline indicator: CO2 emission per capita
3. Local mobility and passenger transportation	Headline indicator: Percentage of trips by motorized private transports
4. Availability of local public open areas and services	Headline indicator: Percentage of citizens living within 300m from public open areas>5,000m2
5. Quality of local air	Headline indicator: Number of PM10 net overcomings
6. Children's journeys to and from school	Headline indicator: Percentage of children going to shcool by car
7. Sustainable management of the local authority and local businesses	Headline indicator: Percentage of environmental certifications of total enterprises
8. Noise pollution	Headline indicator: Percentage of population exposed to Lnight > 55 dB(A)
9. Sustainable land use	Headline indicator: Percentage of protected area
10. Products promoting sustainability	Headline indicator: Percentage of people buying "sustainable products"

Source: AmbienteItalia (2003, p.167).

Between January 2001 and February 2003, local and regional authorities were invited to participate in the second stage of test of those ten indicators. This test project, carried out with twenty-five local authorities, resulted in a final document with all methodological refinements and a headline indicator for each of the ten European Common Indicator Groups (ibid.) (see Table 4.1). An additional Index was also included in the ECI set, the Ecological Footprint (EF), and support was given to the development of a 'local' methodology for a widespread implementation of this index (ibid.). Participating cities were supposed to be able to publish and compare their data with data of other cities via the European Environment Agency's 'EnviroWindows' website (http://ew.eea.europa.eu/), but the project seemed to have had no updates and continuity.

Parallel to those efforts, the European Environment Agency and the DG Regio/Eurostat have also been committed to the development of urban environmental indicators through *EEA Environmental Indicators* or through the quality of life indicators of the *Urban Audit* project[1]. The Urban Audit experience – Assessing the Quality of Life of Europe's Cities is of particular importance. It is a project coordinated by Eurostat with National Statistics Offices, which has been contributing to the development of a comparable database among main European urban areas since 1998 (EC 2007b). This experience has also been incentivising local authorities to implement their own indicator systems tailored to local characteristics (as it happened in the city of Oporto in Portugal, analysed further on as one of the case-studies). It began as a pilot study between 1999 and 2001 involving 58 cities, and covering the impressive number of 450 variables, and whose central goal was a first statistical assessment of the individual situation of each city regarding their conditions of life and welfare to position it in relation to reference values for all cities (ibid.). Since then, the

[1] For further details see the *Urban Audit* website: http://www.urbanaudit.org

project has been evolving to a more focused list of variables; to a broader participation of cities in order to improve coverage and comparability (now covering over 370 urban European centres and all cities with over 100,000 inhabitants); to the incorporation of a graphical tool to be completed in 2011 with the intention of reaching more public (the Urban Atlas); and to the application of a broad questionnaire to assess the perceptions of citizens about the quality of life in the different countries in order to facilitate a complementary qualitative evaluation of the statistical database. The large collection of quantitative data on the quality of life of European cities took place in 2003, 2006 and 2009 and since then the aim is not only to collect annual data, but also to include rural areas. It can be considered a fundamental work at the European level: to harmonize data among cities and to compare results over time.

In addition, several other EU funded researches on the definition of conceptual frameworks or methods to develop local sustainability indicators, as well as on the evaluation of successes and failures of local implementation, have been carried out, namely the PASTILLE project (2000-2002), very cited in this work and a major inspiration for this thesis. It aimed to assess if and how local councils have created and used sustainability indicators in particular local contexts, namely in four European cities and towns (Vienna in Austria, Lyon in France, Winterthur in Switzerland and the London Borough of Southwark). The research consortium[2] aimed to evaluate if and how sustainability indicators were influencing local decision-making and it concluded that "(…) what is important for both practitioners and academics alike is to understand that indicators function **inside** [their emphasis] the governance process [and that] they are not exogenous factors parachuted in, which can act like a magic bullet causing decision-making to become instantly objective and scientific. Creating successful indicators relies far more on focusing on how they are integrated into the processes of urban governance and far less of devising, designing, and tweaking particular indicator sets" (PASTILLE 2002, p.90). To name other projects, the IANUS project (2000-2003) – Indicators to Assess New Urban Services – was developed with the aim to assess the overall satisfaction of public facilities in economic, functional, social and environmental terms[3]; the ECOPADEV project (2001-2003) meant to define and collect data to build indicators of eco-efficiency of industrial parks that could transform these areas into 'eco' industrial parks (this resulted in a web-based tool to be used by Europe's urban planners[4]); or, the PROPOLIS project that has defined indicators and created a computer model to monitor transport and land-use policies and forecast future paths (Lautso and Wegener 2007). Also, projects such as the EU LASALA (Local Authorities' Self Assessment of Local Agenda 21), EU TISSUE (Trends and Indicators for Monitoring the EU Strategy on Sustainable Development of the Urban Environment) and EU STATUS (Sustainability Tools and Targets for the Urban Thematic Strategy) have sought to develop, harmonise and structure indicators for use at the local level (Desmond 2006).

After this general overview of different transnational local projects in Europe, we now turn to a more detailed analysis of particular local experiences with sustainability indicators within the European territory. Some of them were either influenced by or were a result of those transnational projects.

[2] The research consortium was comprised of four municipalities, five research institutes and one organisation designed to link the two (CERTU) (PASTILLE 2002).
[3] See http://www.ist-world.org/ProjectDetails.aspx?ProjectId=1f0214662e714cf9864a152cbb6c8b8c
[4] See http://www.ecopadev.net

4.3. Local Sustainability Indicators Experiences in Europe: Lessons Learnt

The experiences compared in this part were taken from articles published in international journals from 2000 to 2009, which paid special attention to the process of developing sustainability indicators at the local level in Europe. We have also reviewed three different studies that have assessed the role of sustainability indicators in local governance contexts (PASTILLE 2002, Bell and Morse 2003, and Mineur 2007). The selected projects provide an interesting literature review of practices coming from different contexts and backgrounds - some of them from countries with a long history of efforts to establish local sustainability indicators (like the UK, Sweden and Norway). The selected cities are: Stockholm (Sweden) and Sundsvall (Sweden) (with two different indicator systems that do not overlap), Ghent (Belgium), Vienna (Austria), Lyon (France), Winterthur (Switzerland), Iserlohn (Germany), Oslo (Norway), Guernsey (UK Island), North West of Malta (Malta), Cardiff (UK), Padua (Italy) and Bristol (UK) (Table 4.2. provides a summary with the issues compared).

This comparison offers, as far as it is possible, a summary of the main features of the process of designing and developing indicators, and some references to their actual use and impact on local governance contexts. The main points that were compared are: the year of the beginning of the process; the main function assigned to the system; the target group of the system; the scope (dimensions of sustainable development) and conceptual framework adopted (if any); type and number of indicators; the department or institution responsible for the system; the stakeholders involved; and finally, some considerations about their use and major governance challenges.

The majority of the examined experiences started before the year 2000. Some first observable characteristics concerning the type, number and scope of the indicators can be sketched: most of these experiences are based on a list of indicators (ranging from 12 to 74 indicators) and are not based on any particular conceptual framework; only two cities (Oslo and Cardiff) have developed one single index (the EF). The projects vary from a mainly environmental approach to a broader concept of sustainable development, depicting different interpretations of the concept of sustainable development at the local level. The variety of functions attributed to the different systems illustrates well the several possible roles that sustainability indicators can have in local contexts. They intend to assess LA21 processes, to promote communication with civil society, to monitor and assess performance of particular programmes or plans, to identify current conditions and trends, to inform decision-makers, and to serve as a process that encourages public participation and promotes civic action, among others. In accordance to this, the target groups of the system are also very different, ranging from citizens, to public administrators and officers, or experts. However, most of the times, the target group is not explicitly defined but remains implicit in elusive considerations that potentially comprise a number of different actors. Regarding the responsibility for these projects, there is no standard or previously defined entity to take on this task. In fact, it varies from university or research centres to municipal councils. When the municipality takes on these projects, the environmental department is one of the departments with major responsibilities, as well as planning departments and/or central offices. Finally, regarding the stakeholders' involvement, these experiences reveal a highly participative process, with several actors outside the public sphere taking part on the indicators' development. It is clear that some systems are visibly targeting only experts and researchers besides public officers, while others intend to involve a broad range of stakeholders with several participation mechanisms.

Table 4.2 – Local sustainability indicator projects in Europe: a comparative perspective

Municipality (Country)	Name (Year)	Main Function	Target Group	Dimensions of SD/ Conceptual Model (When referred)	Type (List; Headline; Index)	Nº of Ind.	Responsibility for the Project	Stakeholders involved	Comments	Source
Stockholm (Sweden)	LA21 Indicators (1997)	Promote Communication / Assess the LA21 sustainability strategy	Citizens	Environment, Social issues, Economy and Democracy	List	21	Environmental Administration (A21 Office)	Many different actors with broad citizen participation as well as several participation mechanisms	A very participative process but the lack of coordination and cooperation among governmental levels undermined the establishment of the indicator system in the organisation. The system never managed to be a reference point for SD work in the municipality.	Mineur (2007)
Stockholm (Sweden)	Environmental Indicators (1992)	Performance and monitoring tool for internal work / Spread knowledge	Politicians / Public officers (and citizens)	Environment /DPSIR	List	92	Environmental Administration (Env. Monitoring Unit and Env. & Health Board)	Internal work with few external actors and almost no citizen participation	The system got established in the organisation and was linked to an Environmental Programme. Different units from the municipal administration were involved but there is no broad participation.	Mineur (2007)
Sundsvall (Sweden)	Life Environmental Balance Sheet (2002)	Performance and monitoring tool for internal work	Public officers/ politicians	Mainly Environmental and health issues	List	20	Planning Unit	Internal work with very limited external actors (local industry) / no citizens	Indicators are launched as a yearly follow up tool in management of environmental and health policies. Including citizens in the process has never been an issue. Politicians 'fear' public participation and officers see it as merely providing information to the public.	Mineur (2007)
Sundsvall (Sweden)	Welfare and Public Health (2001)	Performance and monitoring tool for internal work	Politicians / public officers	Mainly Social issues	List	47	Executive Board Office	Internal work with very few external actors (experts)	It was important to find cooperation mechanisms with other governmental levels to solve common problems (lack of information, knowledge and goals). The system was defined and developed only by officers with no input from citizens or politicians. Participation was interpreted as informing the public.	Mineur (2007)
Ghent (Belgium)	Barometer for Sustainable Development (1999)	Promote Communication / Assess SD policies	Citizens / Public officers	Environment, Social issues, Economy and Institutions	List with Headline Indicators	60 (15)	Civil Service Working Group / University	Several actors with several participation mechanisms	Recognition of the indicators as a learning instrument with positive results at the communicative, co-design method, policy and participative levels.	Block and Van Assche (2001)
Vienna (Austria)	The Climate Protection Programme (KliP) (1999)	Monitor CO2 emissions and assess climate protection programme	Experts and public officers	Environment (climate protection)	List	36	Vienna City Council	Internal and external experts	It has improved communication between internal departments and has generated several projects. Top-down approach.	Pastille (2002)
Lyon (France)	Environment Observatory (1992)	Monitor air quality and later monitor the state of the city environment	Experts and public officers	Environment	List	n.i.	Greater Lyon Civil Service (Urban Ecology Mission)	Other governmental levels, experts	It facilitates new networks of monitoring stations. Lack of coordination and debate amongst different bodies. Too technical approach difficult to understand for decision-makers and other technical departments. Big discrepancy between the strong political support given to its creation and its gradual confinement within the structure.	Pastille (2002); Morel Journel et al. (2003)
Winterthur (Switzerland)	Sustainability Barometer (1999)	Define and assess policy making process towards sustainability	Public officers/ politicians	Environment, Economy, Society	List and Index	n.i.	City Commissioner for Environmental Affairs	Internal experts	Top-down programme, expert driven, with lack of local uptake of the tools created.	Pastille (2002)
Iserlohn (Germany)	Sustainability Indicators (1997)	Debate, define and operationalise SD in the city	Citizens / public officers	Environment, Social issues, Economy and Institutions	List	12-15	City administration (one coordination office and four work groups)	Several actors with several participation mechanisms	It reflects the application of a procedural framework 'Prism o Sustainability', involving broad and systematic participation of different societal groups.	Valentin and Spangenberg (2000)

Table 4.2 – Local sustainability ind. projects in Europe: a comparative perspective (Cont.)

Municipality (Country)	Name (Year)	Main Function	Target Group	Dimensions of SD/ Conceptual Model (When referred)	Type (List; Headline; Index)	Nº of Ind.	Responsibility for the Project	Stakeholders involved	Comments	Source
Oslo (Norway)	Ecological Footprint of Oslo (2000)	Communicate easily sustainability related issues and inform local decision-making	Public officers/ politicians	Environment	Index	1	University/Research groups	Researchers/External experts	The aim was to develop a methodological approach for calculating a local ecological footprint to provide information for local policy-making. The article does not evaluate its use.	Aall and Norland (2005)
Guernsey (UK Islands)	Sustainability Indicators for Guernsey (2002)	Assess Quality of Life/ Monitoring strategic plans/Raise community awareness	Citizens	Environment, Social issues, Economy	Headline and list of strategic indicators	17 (51)	Policy Council (States Government System)	Several actors, citizens	The initial community interest in the development of the indicators was low but was secured after they were actually up and running, involving an increasing number of stakeholders. Flexibility to change and to the redevelopment of indicators is a key feature. Finding ways to actively engage policy-making with the sustainability indicators has proved difficult.	McAlpine and Birnie (2005)
North West of Malta (Malta)	Sustainable Development Indicators in Malta (2000)	Engage public participation in SD and engage community learning	Citizens	Five themes, multi-dimensional	List / Visual approach	65	Regional Activity Centre for the Mediterranean Action Plan (Blue Plan)	Several actors with systematic interaction	The key aim was to develop an inclusive and learning process through the Soft Systems Analysis (SSA) methodology. The main result was more individual and institutional learning for SD rather than a direct input in policy. However, this can lead to a gap between the aspirations of the sustainability goal and the delivery capability of conventional projects, with the serious danger that the public is seen as nothing more than 'passive' consumers of someone else's sustainability indicators.	Bell and Morse (2003, 2004)
Cardiff (UK)	Ecological Footprint of Cardiff (2003)	Inform about development of policy scenarios in a way easy to communicate and understand /benchmarking /raising awareness	Public officers	Mainly Environmental	Index	1	Sustainable Development Unit of the City Council	Policy development officers/ researchers / experts	The focus has been on engaging many policy officers in the EF development so they have a sense of ownership and trust in the results for their area, because the experience of applying the EF at the UK local level has revealed a lack of transparency, trust and little use of this tool. High-level commitment to the EF and its results was secured through texts, via key documents. It is considered a usefull tool to apply for planning and decision-making, although with various degrees of interest among council's officers.	Collins and Flynn (2007)
Padua (Italy)	Context and performance indicators of ISO 14031 standard - PadovA21 project (2002)	Apply to the LA21 process, promoting sharing and participation/ Guide planning and monitor the actions undertaken	The municipality and the community	Environment, Economy, Social and Health-justice issues	List and Index (Dashboard of Sustainability)	Context indicators (70); Performance indicators (61)	LA21 Forum	Work groups inside the LA21 citywide Forum (no specific information about its composition is available) and a thematic Forum for SI.	The transparency in using context indicators was important to create a shared meaning about the level of sustainability in the city. However, the availability, abundance and variety of information did not help to provide an overall view. The performance indicators, derived from discussions in the civic Forum, became the tools to monitor the achievement of its own plans and the results gradually reached.	Scipioni et al. (2007, 2009)
Bristol (UK)	Quality of Life Indicators (1995)	Monitor and Assess Quality of Life/ Monitor LA21 and community strategies/Raise community awareness	Many groups	Environment and Social issues	List, Headline and Index	74	Environmental Quality Unit	Many different actors, with broad citizen participation as well as several participation mechanisms	Comprehensive annual report that has top-down and bottom-up inputs. It measures five levels of indicators (the 10 ECIs; National and regional headline indicators - provided by national government guidelines; Stakeholder indicator - selected, measured and updated by stakeholders and the community; Local ward and city-wide indicators - introduced and measured by the local authority; and Community Groups Indicators -measured by each group) with visual tools. It is well-established in the municipality and meaningful to the community.	McMahon (2002)

Some lessons taken from these reported practical experiences regarding the impact of developing local sustainability on governance structures and vice-versa were analysed and structured according to the implications for the core values of 'good' governance, outlined in Chapter 2. Table 4.3 intends to summarize the general features of the reviewed experiences.

Table 4.3 - Main conclusions from developing sustainability indicators to core values of 'good' governance for sustainable development

Core Values for 'Good' Governance	Crucial implications for Sustainable Development	Conclusions taken from the development of local SDI
Legitimacy	The need to recognise multiple legitimacies: that all actors are able to recognise the legitimacy of other actors and that they are able to negotiate shared legitimacy on a continual basis (from the processes or the outcomes of decision-making)	Legitimacy was mainly obtained from the 'input-side' (involving key people, involving the general public or using scientific and theoretical inputs). Only in few cases legitimacy was obtained from the 'output-side' (through the establishment of concrete achievements of decision-making)
Efficiency	The need for a continuous evaluation and assessment of policies, linking goals to tasks and activities (with the associated indicators) for every actor	When the target group was clearly defined, the overall assessment and the system structure was adequately constructed and more chances for efficiency were created. The several experiences clearly show the permanent trade-off between efficiency and democracy values. Funding is a critical issue. Few indicator sets were linked to targets, programmes or plans.
Democracy	The need to challenge existing democratic norms and procedures to include more participatory and inclusive procedures	Some cases show that public participation was more complicated then inviting key stakeholders. Furthermore, public participation is still often seen as a synonym of informing the public, whereas no power or responsibilities are allocated to them. Some other cases involved different actors with many different participation mechanisms and broad participation was considered a basic and indispensible feature of the process since the beginning.
Accountability	The need to find measures to support stronger accountability structures at different territorial levels of action	When a feeling of ownership and commitment from the target group was created, accountability was reinforced. Several cases show that trust among stakeholders was a crucial factor, as well as the transparency of the process.

According to the theoretical discussion so far and to the different challenges and obstacles raised by these papers and studies, it is possible to identify some issues that are seldom raised and emphasised in local contexts. They are mainly related to the inherent tensions between complexity and transparency, between the role of experts and the role of lay people, the role of science and the role of lay knowledge, and to the obstacles to institutionalise and maintain updated the created indicator sets. They permanently raise the question of how to best take advantage of participatory approaches and/or how to better coordinate them with top-down ones.

It is clearly recognised and argued in several papers that local communities are crucial actors in the process of selection, collection and monitoring of indicators (Mineur 2007; Block and Van Assche 2001; PASTILLE 2002; Morel Journel *et al.* 2003; Valentin and Spangenberg 2000; McAlpine and Birnie 2005; Bell and Morse 2003, 2004; Scipioni *et al.* 2008, 2009; McMahon 2002). When local people and organizations are active participants in the process of building, interpreting and displaying the indicators, those aforementioned processes were considered crucial individual and institutional learning instruments to debate and raise awareness for local sustainability issues (e.g. in Ghent or Malta). Moreover, they have also improved trust and the communication channels between different actors in the local scene. Some authors explain that the new shared meanings and transformed changed discourses are often what makes the critical difference, particularly if

indicators become part of the players' thinking and decision-making (Innes and Booher 2000). Nevertheless, a main common problem when developing broad participative approaches is the lack of a follow-up strategy for the work on sustainability indicators, as argued by Mineur (2007). This is why there is a need to ensure that a participative process of indicator development does not drain all the energy and resources and that some are left for follow-up actions and further institutionalisation (also in accordance to the findings of Gahin *et al*. 2003, when evaluating American case-studies with local sustainability indicators). When all the energy is directed to the construction of a participative process, if the final purpose of the indicators is not clearly defined since the beginning and/or if there is no follow-up strategy, indicator sets will most likely not be implemented and used. This has happened in several of the aforementioned cases (e.g. Stockholm, etc.).

On the other hand, inviting the public to take part in decision-making processes seems to be much more complicated, expensive and time-consuming than inviting other stakeholders. Several of the experiences have relied on top-down approaches to provide higher consistency in gathering data and analysing indicators and in order to increase the legitimacy and efficiency of the systems (e.g. the Life Environmental Balance Sheet of Sundsvall or the Sustainability Barometer of Winterthur). Mineur (2007, p.240) expresses that the "use of either scientific references or scientists participating in the process increases the legitimating base for indicators", as politicians trust more in expert knowledge for the provision of 'independent' information for decision-making. However, this top-down approach may undermine the transparency of the indicator development process and stifle debate and open discussions through the pursuit of methodological excellence (such as in the case of Lyon). In the Guernsey's Sustainability Indicator Project, McAlpine and Birnie (2005) support the idea that top-down approaches are useful and needed, for example, to start a process when the local community is not willing or prepared to develop such a process. Furthermore, they illustrate how top-down approaches incrementally generated an increasing number of involved stakeholders. Besides, the "continuous redevelopment of sustainability indicators ensures that they remain relevant" (McAlpine and Birnie 2005, p.255).

It is possible to see that the more 'technical' and 'expert' driven approaches (most of the times focusing only on some dimensions of sustainable development and not on the holistic concept) are the ones that are more institutionalized within the municipality and therefore more liable to be used in decision-making. On the other hand, the more participative approaches have faced stronger obstacles to institutionalize the indicator systems in the municipality. Focus on fewer partners with the appropriate skills and a high level of acceptance in the community may be an interesting advice proposed by Sommer (2000). Bristol is, however, an excellent example of how participative and technical approaches can be developed in the same system, functioning as a harmonized and established set in the municipality with multiple and actual uses, where political attention and commitment and financial resources have been present throughout the years.

One must now make a parenthesis to stress that some kind of institutionalisation in the construction and production of indicators is indispensable in order to allow a regular basis in their production and use, but it should be flexible and adaptable (as argued by the Bellagio Principles, by Miller 2007, or others). The question is complex. According to Innes' ideas, the efforts to find better data (in general) for public policies necessarily involves some degree of institutionalization while gathering, disseminating and using data, so that it can be 'produced, accepted, and made part of public decisions no matter what they show or whose side they benefit' (Innes 1990, p.232):

> *"Our goal should be (…) to set up institutions which will permit change in indicators to occur in an orderly fashion, with public scrutiny and public assent, and in a way relevant to changing concerns and perceptions"* (Innes 1990, p.278).

However, the danger of a too formal and rigid institutionalisation - like statistical institutions[5] - is that "the routine measurement of indicators ends up being relegated to a data collection branch of an agency that generates tables of numbers that no one ends up either looking at or using" (Bell and Morse 2003, p.51). So, more than in any other area, it is necessary to find a balance between formal and flexible institutionalisation when dealing with sustainability indicators. In a knowledge-based society, if sustainability indicators are institutionalised, they can transform sustainability issues into laudable and "fashionable" issues, so that they can compete with many other issues that are aggressively marketed and communicated (Evans *et al.* 2005).

Finally, a very particular challenge when developing local sustainability indicators, as stressed in Chapter 2, comes from this interaction between several actors from outside and inside the governmental organization. There is always the risk that the chain of responsibility becomes unclear, and accountability may simply disappear in such a web, where it is no longer straightforward to define who is responsible for what (Rhodes 2003, Kjaer 2004, Mineur 2007). As different target groups often need to be approached differently, an accurate definition of the target(s) group(s) when developing sustainability indicators may increase the possibility of generating a feeling of ownership and commitment to the indicators among the target groups (Mineur 2007). From her research experience, Mineur (2007) also concludes that there is a relationship between a feeling of ownership of an issue and being responsible for it, which means increased (active) support for that issue. Accountability for sustainability indicators can therefore be strengthened if the target group is well defined and if a feeling of ownership is generated. And legitimacy can also be gained through this feeling of ownership (input legitimacy). Hezri and Dovers (2006) also note that it is less problematic to link the content of indicators to the needs of users when indicators are developed for a clear audience, just like performance indicators. Target groups usually include a variety of users and that transforms the use and application of indicators into a source of power and tension among the users. This is why a clear description of the function, aim and users of the indicator system may help to clarify its uses.

[5] Traditionally, the creation of institutions around information gathering and indicators has been associated to statistical agencies, where databases are defined and produced by experts in the pursuit of technical excellence. And it has to be so in the opinion of Jesinghaus (1999). Statistical agencies are very professional and independent institutions for the sake of the production of neutral information with no political or private interferences: "the political power of GDP does not derive from its brilliant concept (there is no brilliant concept behind GDP), but from the fact that government and opposition do not argue about the figures, but rather about the consequences of a rising or falling GDP" (Jesinghaus 1999, p.18). According to him, statistical services have problems of being slow and conservative, but it is a way of assuring its credibility, independency and power. Nevertheless, he admits that most of the times they are not exempt from critiques of political manipulation, **lack of trust** and transparency, avoiding debate, or abuse of power. For instance, as Seasons explains, there are several obstacles put forward by those agencies, such as time, funding, technical expertise, data availability, accessibility and affordability, to transform data into profitable products (particularly when it concerns Census data) (Seasons 2003).

> *"If this "chain" of necessary facets is well-thought out, it is possible to use sustainability indicators as an effective instrument in governance addressing either efficiency loss or participatory deficits in policy making concerning sustainable development"* (Mineur 2007, p.253).

This review of different studies and different practices with local sustainability indicators allowed extracting common lessons and being more alert to the type of debates raised, the type of obstacles faced, the type of challenges and contextual factors that may contribute to the successes or failures of these experiences. Building on these lessons and the whole theoretical debate mentioned so far, the next Chapter explains the research framework and the methodological questions that structured the data collection from the Portuguese case-studies. But before moving on to these explanations, it is vital to contextualise the Portuguese features regarding the development of sustainability indicators at different territorial levels.

4.4. Introducing the Portuguese Context: National and Regional Sustainability Indicators

The production and dissemination of environmental information at the national level is strongly related since 1987 to the annual reports of the '*State of the Environment*', which content has improved along the years. Since 1999, these reports have alternated between more comprehensive editions focusing on wider environmental topics and key themes for sustainable development - trying to reflect the integration of environmental concerns with other sector policy areas such as energy, transport, agriculture, tourism and industry - to more restricted environmental editions (Fidélis and Moreno Pires 2008).

The work undertaken in Portugal in the area of sustainability indicators began a decade later, in 1997, in the Directorate-General for the Environment (DGE), with the establishment of a working group composed by officials of the DGE and two experts. A first proposal of an indicator system for the country was edited in 1998. After two years of discussions and thematic meetings between organisations of the Ministry for Environment, Spatial Planning and Regional Development and representatives of Coordination Commissions for Regional Development (CCRD)[6], a more consolidated version of the system was published in 2000: '*Proposal for a Sustainable Development Indicator System*' (DGA 2000). The 2000 indicator proposal comprised 132 different indicators, with more than a half belonging to the environmental dimension[7]. This indicator set was published to boost and extend discussion to a wider public, in order to incorporate the contributions in a final indicator set further on. It should be noted that the development of the Portuguese sustainability indicator set, in opposition to the experiences of several European countries, was not linked to the draft of a '*National Strategy for Sustainable Development*' (NSSD)[8], since it was produced before the development of the first draft of the Portuguese NSSD in 2002 (Ramos 2007).

[6]The Coordinating Commissions for Regional Development are decentralised bodies of the central administration, the Ministry for Environment, Spatial Planning and Regional Development, which are endowed with administrative and financial autonomy. They are in charge of executing, to the level of its geographic area of intervention, the policies related to regional and urban development, the environment, management of the territory, conservation of nature and biodiversity, the sustainable use of natural resources, urban rehabilitation, regional strategic planning and support for local municipalities and their associations, within the framework of integrated development.

[7] The indicator set proposed in 2000 covered economic (29), environmental (72), social (22) and institutional (9) indicators.

[8] See, for instance, Niestroy (2005) or Soromenho-Marques *et al.* (2004) for interesting reviews on national and regional sustainable development strategies in Portugal .

Nevertheless, neither the NSSD nor the 2000 sustainability indicator proposal had any major developments for some years. After many draft versions (2002, 2004, 2006), the current NSSD version and its implementation plan were approved in August 2007. Regarding the 2000 indicator set, it remained as a proposal until 2005, since no further work was carried out for its operationalisation, no data was gathered and no results were published. Only some of the indicators were used and updated in the national State of the Environment Reports. Neither was the set used to guide national policies nor to assess the country's sustainable development. However, it is interesting to note that, apart from not being implemented, the DGE website registered a visible enthusiasm for the 2000 indicator proposal, which was one of the most downloaded documents in its website. This may reveal not only the importance, but the need for a structured indicator system to monitor sustainable development with guidelines for similar initiatives at regional and local levels, since they do not receive any support from the national level (Fidélis and Moreno Pires 2008).

From 2005 to 2007, the DGE[9] decided to start a challenging revision process of the previous indicator proposal and the consolidated final version was published in December 2007 - the '*Sustainable Development Indicator System for Portugal*'- at the same time that two other important documents were approved: the renewed EU SDS and the NSSD. The two-year process revealed a quite broad consultation of entities, trying to reach consensus among public, as well as private institutions, at different territorial levels. However, the participation mechanisms were mainly based on questionnaires and only on a few bilateral consultations to some national public institutions, which did not allow further integrative efforts[10]. Furthermore, there was no intention of inviting the general public to the process of defining the set prior to its publication. The purpose for involving the selected stakeholders was mainly to improve the final outcome, scientifically and politically, with little consideration for the democratic legitimacy of the process. Table 4.4 summarizes the main features of the *National Sustainable Development Indicator System* (NSDIS).

Table 4.4 – Outline of the national indicator system

Responsibility for the Project	APA (working group composed by officers from APA and experts)
Main Goals	To assess and report on the country's sustainable development; improve management of environmental, economic, social and institutional performance; and make the processes of information flow on the environment and sustainable development more efficient.
Dimensions of SD/ Conceptual Model	Environmental, Social, Economic, Institutional / DPSIR model
Nº of Indicators	118
	yes (30)
Other Ind.	Regional Indicators (30)
Fact Sheet Items	Name of the indicator; brief description; code; headline indicator; regional indicator; dimension of SD; relationship with the conceptual model; theme/area of SD; theme/area according to EU strategies or plans; availability of data; interlinkage with the NSSD goals; unit of measurement; periodicity; data sources; reference documents; methodology; targets; brief analysis of its evolution; graphical representation; other information.
Criteria	*Relevance* (link to the main factors and strategies for SD and to targets and technical or political values; comparability with other international systems of SDI; capability to provide data for other international organizations' indicators; technical and scientific relevance; capability to synthesise; easy to communicate; adequate to the national scale) and *feasibility* (sensibility, robustness, costs, simple data collection and treatment methods and non-confidentiality of data)
Target Group	Explicitly referred to be the public, managers and policy-makers for the whole set and children and young people for a smaller version of the set to be developed specifically for this target group.
Communication Strategy	Paper versions every four years; annual electronic updates and pocket books (with headline indicators and visual tools using of traffic lights); seminars to discuss SD assessment in Portugal every four years; a website about 'The State of Sustainability'; and a 'Barometer of Sustainability' to communicate some indicators to the media in a regular basis.

It is important to add to Table 4.4 that this new set has included specific indicators to monitor the regional level. This is crucial to provide a common structure of indicators to be adopted by all regions. However, regarding the local level, no reference is made to the development and implementation of local sustainability indicators and no work has been carried out so far related to this matter. Finally, the very ambitious communication strategy defined in 2007 has not been followed so far and only a one page quarterly newsletter is being published since then.

At the regional level, an interesting survey conducted in 2007 by Ramos (2007) targeted the assessment of regional initiatives towards the development of sustainability indicators by regional development agencies (CCRDs). The results show that most of them have regular monitoring procedures for collecting, storing and analysing environmental, social or economic data, but mostly to respond to legal requirements, European responsibilities or requests from national authorities. However, this type of information is predominantly "statistics-oriented, involving numerous variables, without being organized or developed into indicators or integrated into a coherent framework" (Ramos 2007, p.7). The author goes on and concludes from the survey that "none of the [regional] agencies has yet developed an autonomous sustainability indicator system that is (…) fully implemented and operational with no well-defined structures for assessing and reporting regional sustainability. Nevertheless, four agencies (Azores, Madeira, Algarve and Lisbon and Tagus Valley) are developing these indicator systems and the remaining stated their intention to do so" (Ramos 2007, p.8). In addition, and regardless of any formal requirement, those agencies were using the 2000 national sustainability indicator proposal as a guideline to develop their sets (ibid.).

The most notorious efforts for building regional indicators to assess sustainability were carried out by two of those regions, Algarve and Azores, which have embraced broad participative approaches for their development. The experience of Algarve, which started in 2002, became a benchmark in the country and deserves to be reviewed with more detail (CCDRA 2007a). Table 4.5 summarizes the main characteristics of its indicator system.

Table 4.5 – Outline of the regional indicator system of Algarve

Responsibility for the Project	CCRD (working group composed by officers from CCRD and experts)
Main Goals	To assess and communicate regional sustainability, to disseminate information in a simple and accessible way to the decision-makers and general public, to raise public awareness and promote public participation in sustainable development.
Dimensions of SD/ Conceptual Model	22 thematic areas (economic development, employment; education; population and migration; poverty and social exclusion; health; security; culture and leisure; governance and citizenship; research, development and technology; mobility and transport; energy; tourism; agriculture; forests; fisheries; air and climate; water; nature and biodiversity; soils and land-use planning; marine and coastal environment; and waste) / DPSIR model
Nº of Indicators	130
Headline Ind.	yes (30)
Other Ind.	yes (proposal of 15 common local indicators)
Fact Sheet Items	Number of the indicator; headline indicator; dimension of SD; availability of data; description of the indicator; unit of measurement; targets; methodology; territorial level; periodicity; data sources. Nevertheless, the fact sheets are only completed for the environmental indicators, all the others remain unavailable.
Criteria	Relevance and quality of available information
Target Group	The target audiences were explicitly considered to be composed by a broad range of actors, from the general public and local communities, to local and central government, regional and local public institutions, companies and non-governmental organizations
Communication Strategy	Printed publications (every three years for the whole set, annual for the headline ind.), leaflets, interactive CD, a dedicated website with available documents in digital support and annual updates.

The main impetus to develop the system came voluntarily through the commitment of the regional agency and, as Ramos (2007) explains, it started with little human and material resources, but with a high degree of enthusiasm among the University of Algarve and the regional staff. Together with the support of the president of the regional agency, that was a fundamental driving force for this initiative. Furthermore, he stresses that the participation of representatives of the regional development agencies in the development process of the 2000 national proposal acted as an important catalyst for the development of sustainability indicators at this territorial level. The Algarve project was then divided in two main stages. The first one was only focused on environmental indicators (from 2002 to 2004) and, the second on the establishment of a comprehensive set, 'adding' the economic, social (including cultural) and institutional dimensions (from 2005 to 2007). Early participation of different stakeholders and distinct participative tools were employed at two spatial levels: on a regional scale and on a local scale. At the regional level several workshops with regional stakeholders[11] and diverse thematic meetings with invited private and public organizations took place (Vaz *et al.* 2007). On a local scale, one workshop was held in each of the 16 municipalities, involving more than three hundred stakeholders (ibid.). Moreover, two international workshops were organized to debate the indicators and presentations and discussions around the set were carried out in several other national and international conferences. The Algarve experience also revealed an interesting effort to harmonize local and regional experiences (through a proposal of a common set of local indicators) (CCDRA 2007b), to harmonize national and regional practices (through the inclusion of several regional indicators linked to the NSSD) and to harmonize different regional sets (with the cooperation of other regional agencies like Lisbon CCRD), as well as transboundary projects (particularly when articulating monitoring strategies of sustainability between the Algarve and the region of Andaluzia in Spain). Furthermore, Ramos underlines an important outcome of this experimental process that is even more significant if we bear in mind that CCRDs have no direct democratic legitimacy, nor major competencies or fully independent decision powers from the national government:

> "*many of the uncertainties and doubts about the project outcomes and their real utility to the agency and stakeholders were better understood and received with this model of governance, where university, regional agency and other regional stakeholders have a common commitment*" (Ramos 2007, p.18).

Clearly, this experience at the regional level has best demonstrated how the development of sustainability indicators can provoke changes in traditional institutional practices. Not only has it contributed to strengthen the efforts for territorial coordination among government agencies and among local and regional non-public stakeholders, but it also enabled wide platforms to debate and operationalise the concept of Sustainable Development for the region. These new governance arrangements were interestingly set up through the impetus of sustainability indicators. The role of political commitment and leadership and the enthusiasm of the members of the working group were particularly determinant and need to be emphasised in that context, as well as the efforts to ensure credibility to the set and its message. And this is particularly important when there are few formal mechanisms of accountability and democratic transparency at this regional level. However, so far indicators are lacking follow-up measures and updates.

[11]Namely regional and local administrations, universities, professional schools, companies, business associations, professional associations, recreational associations, environmental and development NGOs and the regional media.

To conclude this part, it must be underlined that none of the sets, the national one or the one from Algarve, have been fully operationalised yet, even though almost a decade has gone by since the beginning of the processes. Innes and Booher (2000) stress that developing sustainability indicators are, nevertheless, long-term learning processes that need time to make a difference. For that reason, we believe that it is useful to extract and reflect on the main lessons of the progresses made so far, to help guiding future work on sustainability indicators in Portugal. The contributes of a more close look of the challenges faced by local experiences should also be properly analysed. For that reason, the next part starts with an overview of practices related to the development of local sustainability indicators in order to map the contextual features where our case-studies take place.

4.5. Understanding Local Portuguese Features: Governance for Sustainable Development and Sustainability Indicators

Portuguese local government has been criticized for showing poor levels of integration of environmental issues in policy and decision-making processes, for acting distantly towards citizens, while not strengthening public involvement (Moreno Pires 2002, Schmidt *et al.* 2005). Moreover, it has been criticized for a too soft internal restructuring to promote integrated views of development, seen as key-issues to promote sustainable development. Its internal organisation still reflects a compartmentalized and separated structure, reflected in the different departments for economic development, social and cultural affairs, land-use planning and environmental protection. Also, it is only recently that local administrations are reorganising their institutional structure to include an environmental division or department. In total, Portugal has 308 municipalities - 278 in the mainland and 30 in the Islands of Azores and Madeira - with an average of 32.500 inhabitants each. Nonetheless, even when considered separately, municipal competences related to territorial development and social, economic and environmental matters are theoretically included in the set of responsibilities and expectations assigned to the local level for the implementation of sustainable development (see Lei 159/99 on local competences). However, it should be stressed that the continuous enlargement of responsibilities has not been accompanied by the same increasing in budgetary conditions of municipalities. According to Breda-Vázquez *et al.* (2010, p. 215), this financial "vulnerability creates a strong dependency on sector-based state interventions, on bureaucratic control systems, and on funding decisions that are often made for specific purposes".

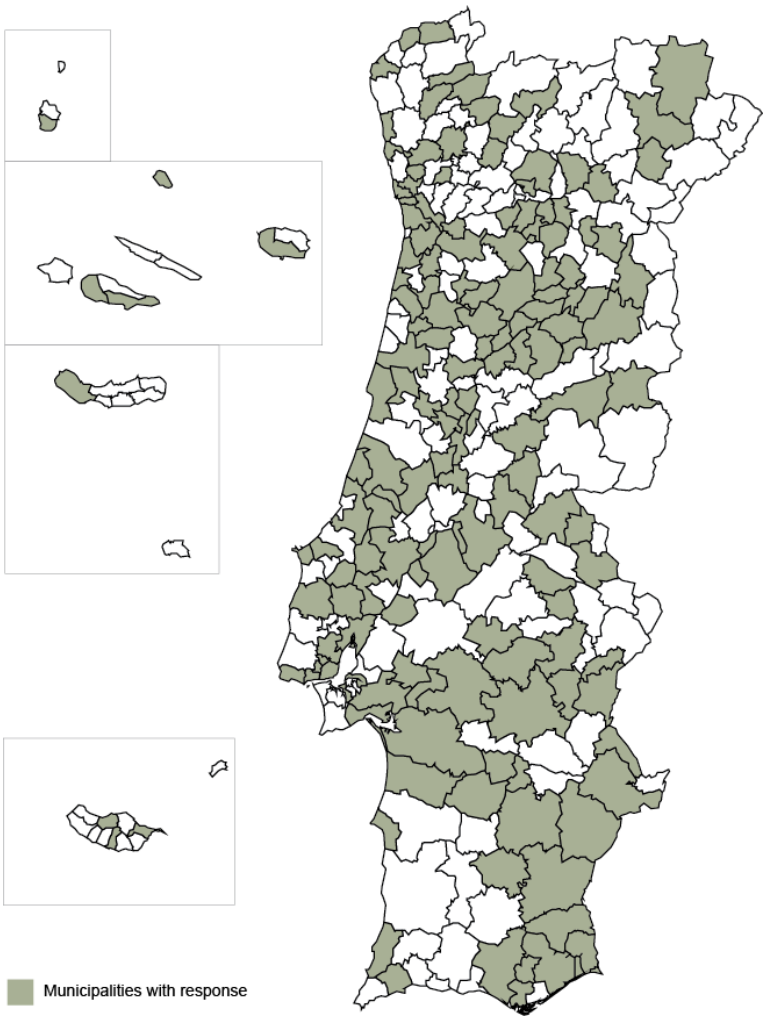
Regarding LA21 implementation, practice still reveals a long way to go in Portugal, since only recently have those initiatives started to assume some visibility (see Fidélis and Moreno Pires 2009 for a review of the challenges of implementing LA21 in Portugal). According to a survey carried out on all Portuguese mainland municipalities in 2007 to understand to which extent LA21 and Local Environmental Plans (LEP) were being implemented in Portugal and how deep those processes were inserted in local planning and management, it was possible to identify 86 municipalities engaged in LA21 processes and 7 with LEP (Fidélis and Moreno Pires 2009). From these 93 cases, responses concerning the implementation of monitoring mechanisms and particularly indicator sets were very unsatisfactory, revealing an extraordinary lack of awareness of the importance of building monitoring strategies. Only 15 municipalities (16%) confirmed the *use* of locally designed indicators and 2 mentioned the *use* of European indicators. However, it is noteworthy that, from those municipalities, 10 had started the LA21 process only one or two years before this survey, which is a short period of time to assess if and how monitoring strategies were

really in place. This means that very few indicator sets to monitor LA21 strategies were, indeed, operationalised. This information raises questions about how and if LA21 has been monitored in our country, and how many have the resources to maintain indicator sets or monitoring strategies over time. Moreover, the Portuguese Environmental Agency (see APA 2007), responsible for the National sustainability indicator set, when trying to analyse and identify the development of sustainability indicator systems at the local level, have underlined the complexity of this task, since there was, and still is, very little information about these processes.

Therefore, an indispensable step for this research was the elaboration of a national survey on all Portuguese municipalities specifically aiming to understand how many local sustainability indicator experiences were being developed and their very general features (see Moreno Pires and Fidélis 2009). A questionnaire was then prepared in 2008 and sent to the leaders of all the 308 Local Councils. The next Chapter will look into the methodological details of this survey, while in this one we intend to summarize the main conclusions drawn from it, which are essential to better understand the Portuguese local reality concerning the development of sustainability indicators in the absence of such structured information.

The questionnaire received a total of 161/308 responses, about 52% of the Portuguese municipalities from all the seven NUTSII regions, although the percentage in the insular regions of Azores and Madeira was lower (see Map 4.1).

Map 4.1 – Local Councils that responded to the questionnaire



The majority of responses (63%) are from small municipalities with less than 25,000 inhabitants (see Figure 4.1), which is also the reflex of their higher number, considering the Portuguese municipalities' size.

Through the analysis of the first question of the questionnaire that asked directly about the existence of sustainability indicators in the municipality, it is possible to see that 81% of the municipalities answered that they did not develop any integrated indicator set targeting sustainability issues (Figure 4.2). Only 30 municipalities[12] (19%) declared having developed or being engaged in developing a specific comprehensive set for its local context[13]. Before analysing these few but (apparently) positive responses more closely, several aspects of the findings of the questionnaire are worth underlining.

Figure 4.1 – Respondents by Nº of Inhabitants

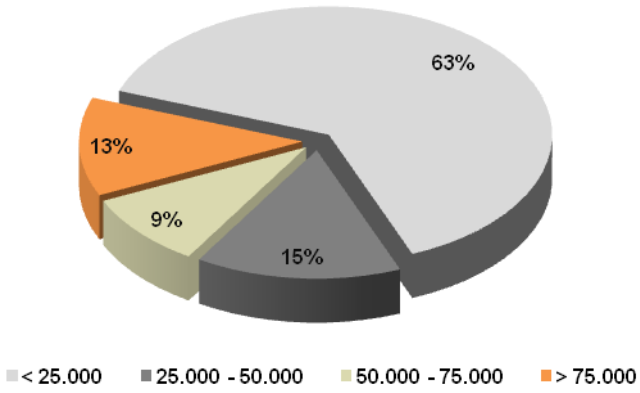
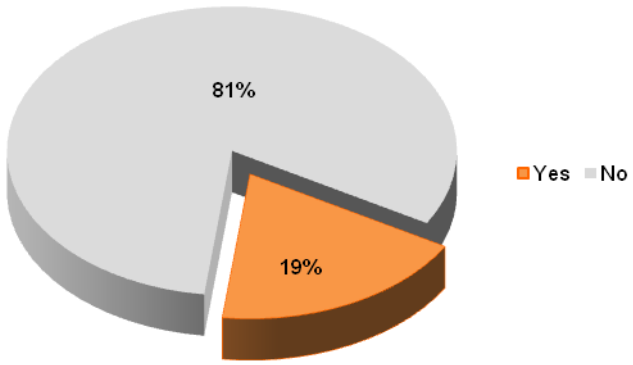


Figure 4.2 – Local Councils with sustainability indicator sets



[12] Alfândega da Fé; Alter do Chão; Armamar; Arraiolos; Aveiro; Cantanhede; Caminha; Castro Daire; Fornos de Algodres; Guarda; Guimarães; Loulé; Manteigas; Matosinhos; Mora; Moura; Odivelas; Oeiras; Oleiros; Palmela; Ponta Delgada; Porto; Redondo; Santa Comba Dão; São João da Madeira; Tavira; Trofa; Vila Franca de Xira; Vila Real; Vila Real de Santo António.

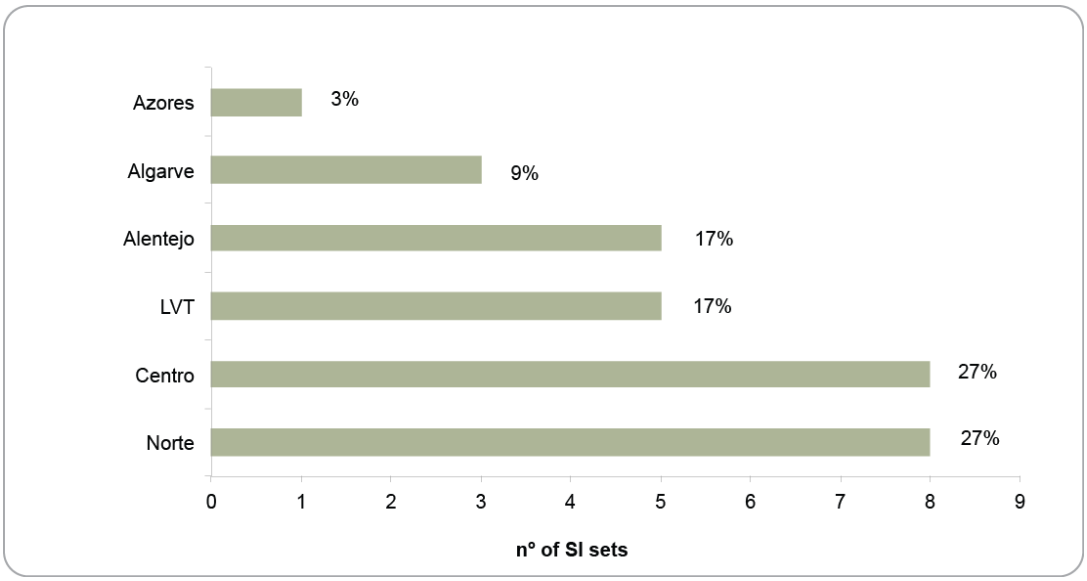
[13] 13 municipalities evidenced their involvement in the ECOXXI initiative, but they were not considered in this 30 municipalities as we were aiming to assess the development of specific sustainability indicators tailored to local contexts.

In the first place, there is a frequent misunderstanding concerning what a sustainability indicator set entails. Many municipalities that stated to have such a set, justify this answer with their systematic gathering of statistical data from different areas, that is required by law (such as: waste production, quality of water, etc.), perceiving sustainability indicators as an amount of statistics, without any type of local selection or filter, collected separately by different public divisions and not integrated into one single system.

In the second place, more than 10% of the municipalities, even though participating in a voluntary national project which establishes common indicators to assess local sustainability – the ECOXXI initiative (we will come back to this later on) –, revealed to ignore this participation. This initiative aims to synthesise different areas and themes, trying to establish a relationship between common measures of local sustainable development with targets or trends previously defined for each of its 23 indicators. This lack of knowledge may prove that there are problems of information flow between departments within a local council or that such programme is considered of little importance, which makes those indicators 'invisible' outside the environment departments (Moreno Pires 2009).

Finally, it should be stressed that several municipalities answered that, although they do not have comprehensive or transversal systems, they have different sectoral indicator systems aiming to monitor trends of particular areas or plans. Bearing this in mind, one interesting result is related to the high number of municipalities involved in social indicator sets[14] (35 cases); Sectoral Plans (18 cases) – for instance, plans for the prevention of forest fires (5 plans) –; Quality Management Systems (13 cases); Environmental Management Systems (5 cases) and Land-Use Plan Reports (6 cases) or others (10 cases).

Figure 4.3– Local sustainability indicator sets by NUTSII regions



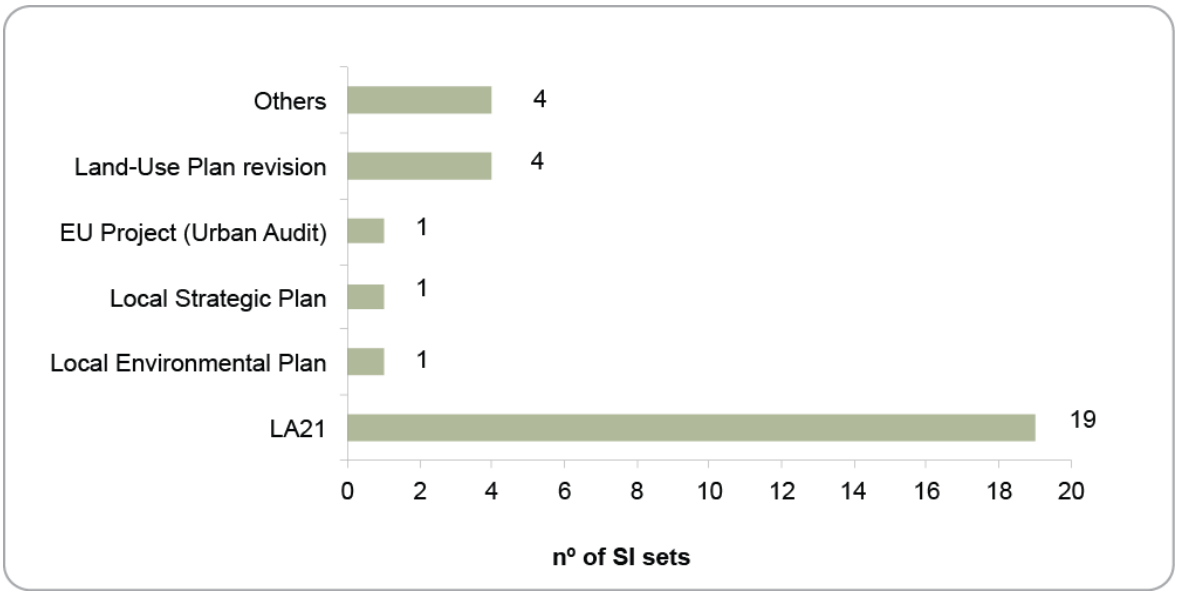
Concerning the 30 municipalities which stated to have developed specific sustainability indicator sets (see Figure 4.3 for their regional distribution, by NUTSII regions), several considerations can

[14] Most of them were a result of their participation in a national programme called Social Network (see http://195.245.197.216/rsocial/).

be made. Notwithstanding corresponding to a low percentage of the total, the sets were mostly set up in 2008/9 (50%) and from the sets developed before 2008, only ten (out of fifteen) municipalities state that the indicators are operationalised and being updated. In addition, 47% of the experiences are from small municipalities with less than 25,000 inhabitants, while 23% are from cities with more than 75,000 citizens, including Lisbon and Oporto (Fidélis and Moreno Pires 2009).

This means that it is a very recent phenomenon with a growing interest, mostly driven by the recent increasing number of LA21 in the country: from these initiatives, 63% had as a major *driving-force* the implementation of a LA21 process in the municipality (Figure 4.4), with very few experiences targeting the development of indicator sets *per se*, without being attached to any specific plan (only in 4 cases).

Figure 4.4 – Local sustainability indicator sets by main driving-forces



From several possible goals, the local councils were invited to choose the ones that most reflected the *purpose of their sets*. The most popular goals were: the need to evaluate current local conditions (90% of the cases); to monitor a specific plan or strategy (77%) and to support and inform planning and decision-making (80%). Of lesser importance were goals such as: changing the allocation of resources of established policies (20%); meeting legal requirements (27%), the introduction of new working routines in the local council (33%) and the creation of opportunities for broader debates and public discussions (40%).

They have also responded that their *main target groups* are politicians (73% of total) and officers (77%), but also the population (73%) and to a lesser extent specific local sectors (47%). Nevertheless, when asked about the established *communication channels* to disclose indicators, only 17% stated the media, 47% the Local Council Website and 67% paper reports. But in most cases, information cannot be easily found or is not openly available in the websites as stated. These general findings may indicate a certain incoherent relationship between the indicators' major role, their target groups and the communication strategy. This is an interesting finding to confront with and to explore in the analysis of the case-studies, to see how distant this general conclusion is, or not, from concrete and specific local experiences.

To finish this part, it is important to highlight an innovative project in Portugal and also a internationally pioneer experience (that many member countries of FEE – Foundation for Environmental Education – want to adopt) regarding the implementation of sustainability indicators at the local level: the ECOXXI project. It is also the only initiative developed with a national focus for every local municipality, which allows comparisons between local contexts and, more importantly, sharing guidelines, ideas and experiences.

In 2005, the Environmental Non-Governmental Organisation (ENGO) ABAE (European Blue Flag Association), a Portuguese branch of the international ENGO, FEE (Foundation for Environmental Education), decided to start the ECOXXI programme. The main goal was, and still is, to contribute to the development of sustainability indicators at this territorial level, through a collaborative and interdisciplinary process, also aiming to identify good sustainable local practices: eco-municipalities. The project is based on the calculation of an ECOXXI index for every municipality that wishes to apply it. It aims to synthesise several themes in one final percentage that establishes a relationship between concrete or real measures of local sustainable development and the corresponding targets or trends, of each of the indicators. The index is then a result of 23 indicators that have been changed and adapted as the programme evolved. They have been defined by the input of the interdisciplinary and inter-institutional National Commission and by the practical contributions of local authorities. This Commission is composed by several public institutes and organisations, such as ABAE, the National Environment and Sustainable Development Council, the National Statistics Institute, as well as several universities, which sum up to a total of about 30 entities[15]. In this Commission, several expert groups function as juries that reflect, analyse and evaluate indicators according to their area of expertise.

The ECOXXI programme, thus, represents a multidisciplinary initiative, involving national and regional entities and focusing on the local level. Conceptually it translates, in nature, the basic (horizontal and vertical exchange) aims of sustainable development and in practice it has been challenging some local practices (as the case-study of Oeiras will show). Local authorities are free to apply for this index, since it is a totally voluntary process, which dependents entirely on their involvement. However, two particular conditions prevent several municipalities to participate: meeting the pre-requisite (namely, the local authority can only apply if at least one of its municipal schools is involved in another ABAE/FEE project: the *Eco-schools* programme) and paying a fee, which varies according to the number of local inhabitants and the number of times the local authority has applied for the project.

Every year since 2005, ABAE publishes the index for all the municipalities involved and the final result is awarded with a symbolic 'green flag' for the local authorities that accomplish more than 50% of the established goals[16]. In total, 63 different local authorities have applied over the 3 years experience of the project, but in average, per year, there have been around 39 local authorities involved, representing 13% of the total at the national level. ABAE is also preparing an annual monetary "good-practice" award - for changing thematic areas - for one local authority.

[15] See http://www.abae.pt/programa/ECOXXI/comissao.php for further details.
[16] There are also two other 'awards': a medal to the ones that achieve between 40% and 50% of the goals and a certificate to every local authority that participates in the programme with less than 40% of accomplished goals.

4.6. Concluding Remarks

The European Union has been playing a central role towards the efforts to harmonize common sustainability indicators for the local level, through its institutions and funding, fostering several research projects in the search for more answers to the debates around those indicators. The literature review of several different local projects in Europe allows us to understand how strategic the role of sustainability indicators can be in governance contexts and how dependent they also are on the historical and contextual practices, on the players and institutions of those contexts. '*Building up* local knowledge' and '*building on* local knowledge' for sustainable development seems to be the key for developing governance conditions for effective development options (Evans *et al.* 2005). This underpins the major argument of this thesis which considers that indicators may, therefore, be important steering processes for governance for sustainability, under certain conditions.

The analysis of the Portuguese context at different territorial levels provided further background information. The national indicator system and, particularly, the regional system of Algarve are two good examples of projects that develop indicators aiming to assess sustainability paths and to horizontally and vertically harmonise data and information. They have sought to combine 'expert-oriented' approaches with participatory initiatives, challenging traditional relationships amongst government entities and other stakeholders, fostering new governance arrangements and new conditions to change administrative and political cultures. However, they still strive to be regularly updated and to disseminate their results. At the same time, they were poorly succeeded in providing a strong impetus or general orientations for the local level, especially when there is no other line of support from the National Government. This is even more crucial when the findings of the questionnaire described a general picture of local experiences with sustainability indicators hand in hand with a fragile monitoring culture towards local sustainable development, even if making slow progresses. The findings of Breda Vázquez *et al.* (2010) is but one example that underlines well this lack of data for monitoring and continuous appreciation of outcomes of different local initiatives and the significant undervalue attributed to ongoing evaluation procedures. The few and relatively recent experiences with local sustainability indicators in Portugal reveal that they are still at an immature stage of development when compared to other countries, such as Sweden or the UK.

CHAPTER 5
NOTES ON THE CASE-STUDY METHODOLOGY

"Predictive theories and universals cannot be found in the study of human affairs. Concrete, context-dependent knowledge is, therefore, more valuable than the vain search for predictive theories and universals." Flyvbjerg (2006, p. 224)

5.1. Introduction

Doing qualitative research implies a serious effort to present valid interpretations of the materials and analysis carried out and to defend the findings, as they cannot be generalized in a quantitative or statistic sense. This is why it is particularly important to be clear about the methodology and methods used and to justify all the research structure. In addition, doing qualitative research allows us to use multiple frameworks associated with different theories, especially if we are not aiming to develop new general theories or to predict possible paths for the future, but to understand 'where we are, where we want to go, and what is desirable' instead, according to a diverse set of values and interests. As we have said in Chapter 2, Flyvbjerg's work and arguments justify our interest in a research that aims to deeply confront theory with practice, theoretical frameworks with practical struggles, and to focus on context-dependent knowledge, based on the understanding of particular processes, people and institutions. Flyvbjerg's inspiring work on phronetic social science has contributed enormously to social sciences because he has:

> *"simultaneously provided a strong theoretical foundation for his vision of a politically relevant social science and illuminated his position with concrete examples from his own empirical research. (…) What was unique about Flyvbjerg's call for a renewed social science was the way that Flyvbjerg transgressed disciplinary boundaries to make a more compelling call for a social science (…). The book [Making Social Science Matter] was undoubtedly provocative, especially in political science, where it has helped to make the discipline more relevant in understanding not just the problems political scientists address in their studies but also the problems political actors confront in the field of political struggle" (Shapiro and Monroe 2005 cited in Caterino and Schram 2006, p.1-2)*

Considering multiple perspectives and reflecting on contextual situations has proved to provide valuable contributions and to be crucial for the understanding of social and political life, as defended by Flyvbjerg (Schram 2006). Using the words of Schram (2006), "regardless of the fact that both natural and social sciences are forms of learning in context that produce value-laden facts, social life, as opposed to the objects of natural scientific inquiry, involves multiple interpretive lenses that offer a cacophony of competing perspectives emanating from its origins in conscious, thinking human beings. Under these conditions, no one form of disciplined study of social life should be organized paradigmatically to exclude the consideration of multiple perspectives" (Schram 2006, p.30). In this sense, our research is in synchrony with this multiparadigmatic perspective, when we emphasize the need to understand context through different interpretive lenses. Nevertheless, it is built on contextual evidence at the same time that it makes reference to relevant theories as practical guides. This is probably the major contrast with Flyvbjerg's position,

when he defends that a better approach to phronetic social science is a post-paradigmatic or non-paradigmatic research, meaning that "such a body of work would involve theory as something that grows out of the practices in specific contexts while still working to achieve critical distance on prevailing understandings of those social practices" (Schram 2006, p.31). We believe that while facing multiple competing paradigms[1], when building upon them, they can provide both alternative and overlapping insights towards the phenomenon of interest, constituting a substantial body of knowledge for research that should not be dismissed (Yang *et al.* 2008). In addition, the aforementioned insights contribute to assemble a common framework to conduct comparative research and place results.

> *"While there are many difficulties inherent in conducting comparative research, the fundamental threshold problem in the comparative local government field is the lack of a common framework to conduct such research, to place results, and to build upon them. Not only does the lack of such a framework make it difficult for conducting research and for generalizing across research, it also makes it difficult for presenting even descriptive much less analytical finding"* (Wolman 2008, p.88).

In this context and after reviewing the literature, this Chapter intends to be our bridge between the theoretical and normative frameworks, and practice. Interpretivist research, such as this one, "encourages authors to draw on a wide variety of methods from a diversity of theoretical perspectives, combining theory and empirical work in different and creative ways, all in dialogue with political actors in specific contexts" (Schram 2006, p.20). As such, the second part of this Chapter aims to justify and describe the framework built to analyse and compare the case-studies. A specific analytical structure and a particular conceptual framework were designed to enable the identification of key factors and their relationships shaping the potential role for sustainability indicators in local governance contexts. The third part explains the specific methods and techniques used to select the case-studies and to gather and analyse the relevant data in order to understand them, and the fourth part concludes the main points of this Chapter.

5.2. Framework of analysis

Two main operational questions guided our investigation on the case-studies, as stressed before: (1) Do indicators challenge or change local governance practices for sustainable development? If so, in what ways?; (2) Are indicators actually used? If so, in what ways? In order to answer these questions and to organize the empirical material collected for each of the seven local sustainability indicator sets – our case-studies – a specific analytical structure was designed, which will be presented in the next section. This section also aims to describe and justify the organization and contents of Chapter 6, where each case-study will be explored in detail. The second section explains the conceptual framework based on a set of 'ideal' criteria for 'good' governance for sustainable development at the local level, which have framed our institutional analysis. Through this framework, it was possible to structure a comparison between the findings gathered from all of the case-studies. Chapter 7 presents the analysis of these 'ideal' criteria.

[1] We consider the term *paradigm* as a "view of reality and an intellectual framework that specifies a discipline's proper domain, basic assumptions, appropriate research questions, and rules of inference (Arndt 1985; Morgan 1980) [and as such] paradigms are broadly equated with perspectives and theoretical lenses through which people perceive different pictures of the same world" (Yang *et al.* 2008, p.25).

5.2.1. The Analytical Structure of the Case-Studies

Each sustainability indicator set is examined separately in Chapter 6 and considered in their specific context with its particular characteristics. However, the information gathered from the seven indicator sets is organized around the same analytical structure (summarized in Table 5.1). The first parts of the structure are more descriptive as they intend to depict background and contextual information, while the last ones are more analytical with some normative concerns, inspired by and analysed through the theoretical lenses of the previous Chapters.

Table 5.1 - The structure of the analysis of each indicator set in its context

Part	Specific issues	Nature
1 - The driving force project and administrative context	Background information on the driving forces and administrative context in the beginning of the indicators' process	Descriptive
2 - Outline of the indicator system	The scope of the system, the number and type of indicators, their functions, aims and target groups, among others.	Descriptive
3 - The process of developing the indicator system and the actors involved	Institutional arrangements (political, administrative and organizational elements) and actors involved.	Descriptive
4 - The importance of the set for local governance and its different uses	**i)** Importance of the set in the context of local sustainable development	Analytical
	ii) Governance changes and challenges	Analytical
	iii) Different uses of the set	Analytical

1) The driving-force project and administrative context

According to the definition of March and Olsen (1989) provided in Chapter 2, our research considers institutions as including not only the routines, procedures, roles, strategies and organizational forms around which political activity regarding local sustainability indicators is constructed, but also the beliefs, paradigms, cultures and knowledge, that surround, support, elaborate, and contradict those roles and routines (March and Olsen 1989). Therefore, when analysing each case-study, the first attempt is to broadly map the organizational arrangements, administrative contexts and driving force(s) behind the impetus to start developing such indicator sets. This introductory part is a valuable starting point not only because the majority of the sets are a result of broader projects - and thus it is vital to situate them in a more general strategy -, but also because it is crucial to clarify and understand the context and main (formal and informal) motifs to develop such indicators.

2) Outline of the indicator system

The second element of our institutionalist analysis, which is also more descriptive, intends to capture the main features of each indicator system, such as the organisational body responsible for the set, the main goals for the development of the indicators, scope of the system and the dimensions of sustainable development considered, number and type of indicators, fact sheet items, guiding criteria, as well as the target groups and communication strategy established to report their evolution. A summary table is provided for each set and some points are briefly explained, to complement the table when necessary.

3) The process of developing the indicator system and the actors involved

The third part provides an understanding of the institutional arrangements and main actors involved in the process of developing such indicators from its early stages until as recently as possible. The goal is to consider not only the main steps of the process, but also the role of experts, policy-makers, officers and other actors involved, their values, routines and everyday working practices and to try to understand how they interact. This enables, as Rydin stresses, to "reveal the normative pressures towards a particular pattern of behaviour on the part of actors, [and to understand] how actors construct their roles, and the extent to which these are embedded or amenable to change" (Rydin 2006, p.20).

4) The importance of the system for local governance and its different uses

Finally, the last part of the individual analysis intends to particularly draw from quotations of the interviewees to underline their perception of the importance of the set for local governance. We will focus mainly on the opinions of politicians *vs* public officers and the way they both interpret the set. Attention is devoted to the changes or challenges that the development of the indicators has brought to governance contexts, addressing main issues raised by the interviewees regarding legitimacy, accountability, efficiency and democratic values. Here, the ideas and discourses of the relevant actors regarding the indicators play a special role. The final part is devoted to the understanding of *if* and *how* the indicators are effectively used (our second research question), while trying to determine their possible uses, from instrumental, to conceptual or symbolic ones. The possible different indicator usages were analysed in detail in Chapter 3, but must be recalled.

Table 5.2 – The potential uses of local sustainability indicators

Type of use	Description
Instrumental use (concrete outcomes)	New plans or programs Incorporated into planning Comparison Influence decisions Monitor progress of strategies Change resources allocation
Conceptual use (intangible outcomes)	Provide forum for discussions Bring people together Disseminate information Increase awareness Get the big picture New working relationships Changes of values
Symbolic use	Speech Show trends to others To justify or support views or policies Draw attention to certain issues Background information

Source: Adapted from Gahin *et al.* 2003 and Rosenström 2006.

Our analysis of the uses of local sustainability indicators is built upon the work of Hezri (2004) and Nezri and Dovers (2006) in particular. As explained in Chapter 3, *symbolic use* is considered to be very close to *political use* and to *tactical use* and this is why we have grouped these three categories under the name of *symbolic use*. As such, our work will base the assessment of the case-studies on the *instrumental*, *conceptual and symbolic* uses. The intention is to focus exclusively on these specific types of uses and not to assess a broad spectrum of uses and users (see Table 5.2). Our main argument is that a more nuanced understanding of the uses of indicator systems begs an empirical investigation to encourage more grounded thinking towards better institutional and governance arrangements for sustainability indicators (Hezri and Dovers 2006). Using their words, "indicators are a showcase of the transformation of the traffic flow of information in the transition from 'government' to 'governance'" (ibid., p.96).

Finally, it is important to stress that the power issue is transversal to the construction and (whatever) use of indicators and implicit in all relations between actors. According to Rydin (2006, p.28), power "whether understood as the ability to achieve an objective or to make other actors behave in a certain way, is an integral aspect of how networks work". Flyvbjerg (2001) is very keen in affirming that *knowledge is power*, as defended by Francis Bacon, in the sense that who holds knowledge reinforce their power capacity, but also and mainly that *power is knowledge*. For him, this inverse relation of *power is knowledge* is even more important as "it shows how power defines what gets to count as knowledge. It shows, furthermore, how power defines not only a certain conception of reality. It is not just the social construction of rationality which is at issue here, it is also the fact that power defines physical, economic, social, and environmental reality itself" (Flyvbjerg 2001, p.155). And this gains a new dimension when considering indicators that somehow aim to assess such a diffuse concept as sustainable development. The understanding of power relations in the process of indicator development and their use, is therefore vital to deeply understand local reality and explain both operational questions. Hezri and Dovers (2006) agree and also defend in their article that the use and application of sustainability indicators can become a source of power and tension between the users and that it is therefore indispensable to have a deeper understanding of these behaviours in policy systems.

5.2.2. The Typology-Framework to Compare the Case-Studies

In order to make the comparison of the empirical material possible, a set of ideal-criteria was considered in a typology-framework (see Table 5.3). Taking into consideration that there are weaknesses in any institutionalist approach related to its broad applicability, we found it necessary to identify and specify particular governance aspects, even if consciously at the expense of others. As a starting point, this ideal-typology framework explores the overall research question of whether sustainability indicators can have a positive impact on local governance for sustainable development. Criteria were mainly selected from the theoretical discussion provided in the literature review in the first Chapters. The aim was to build an ideal-typology that could help not to 'judge' or criticise reality according to those standards, but to better understand reality by distinguishing patterns or trends with the help of ideal factors for sustainable development governance. These normative factors were designed after an examination of some comparative institutional studies on governance structures, such as the one elaborated by Swanson and Pintér (2006) or the ideal set of principles for developing sustainability indicators taken from the Bellagio Principles (Hardi and Zdan 1997).

These criteria helped to structure our interview questions and to merge our interrogations about what type of local factors could have an impact on indicators or vice-versa. At the same time, we always try to keep an 'open mind to surprises' that could occur when understanding the role of sustainability indicators in particular local contexts. Consequently, after the confrontation of the ideal-criteria with the empirical material, some aspects that were not initially considered gained terrain in some case-studies and this was an interesting point of 'collision' between theory and empirical data.

Furthermore, in order to structure the results of every criterion in each case-study and to facilitate their visual interpretation, we designed and used a nominal qualitative scale. The single purpose of this scale is to simplify our results and to translate them into a single word, but it does not dismiss the careful appreciation of each criterion in context. As such, we assessed the performance of each criterion, i.e., the way its ideal outcomes are more distant or close to its practical or empirical findings, according to 5 different categories:

Figure 5.1 – Qualitative scale to evaluate the performance of each criterion

Generally, when the empirical findings are very distant from, or lack strength to achieve, the ideal outcomes of a criterion, the performance of that criterion for that case-study can be categorised as *Very Weak*. In opposition, when the empirical findings are very close or show potential to achieve the ideal outcomes of a criterion, the performance of that criterion for that case-study can be categorised as *Very Strong*. The category *Moderate* means that the empirical findings of that case-study are neither too close nor too distant to the ideal outcomes of that criterion.

Rydin argues that it is important to recognize the strongly normative element of these criteria that may confuse their more analytic application. For her, "this sounds idealistic and raises a number of questions" such as, "are there any conflicts between these multiple requirements? What are the barriers that prevent such ideal criteria from being established? How realistic are these recommendations? (…) [This is why it is crucial to] investigate the type of institution that exists in a particular situation, to see how it is working and to make a judgement on the goals it is achieving. Only on the basis of such research can policy recommendations for institutional design be put forward" (Rydin 2006, p.31).

1) Nature of the indicator system

The first governance element relates to the *nature of the indicator system*. There are three relevant criteria to consider: (a) the *scope* of the indicators - it is better for an indicator system regarding sustainable development to cover broader issues and areas than to specifically target only one or two dimensions of sustainability; (b) the *timeframe* - it may be implicit or explicit in the indicator set, implying that it is desirable to aim for a long-term vision for sustainable development instead of a short-term one; and (c) *coherence* - it is important that there is a certain degree of consistency among the defined roles for the indicators, their intended aims and target groups. We aim to

unpack the underlying knowledge frames under these criteria, which give meaning to the flow of information within the network (Healey *et al.* 2002).

Table 5.3 – Ideal criteria for good governance for sustainable development and their performance related to the development of local sustainability indicators

Governance element	Criteria	Very Weak	Very Strong
1. Nature of the indicator system	*Scope*	Restrictive scope of indicators which only incorporates one dimension of sustainable development with no integrative efforts	Broader scope of indicators with an effort to integrate several areas and themes of sustainable development
	Timeframe	Very short-term vision for sustainable development implicit in the system	Long-term vision for sustainable development implicit in the system
	Coherence	Very poor relationship among the function, aim and target group of the system	Very good relationship among the function, aim and target group of the system
2. Assigning overall responsibility	*Political Commitment*	Absence of any political support and commitment	High support and commitment from the Mayor or executive political board of the local authority
	Sensitivy to Change	Highly sensitive to political shifts	Very little sensitive to political shifts
3. Government coordination	*Sectoral Coordination*	Only one department of the local council involved	All departments of the local council involved
	Regional Coordination	Absence of integration of the local set with indicator projects or sustainable development policies of other governmental levels	Very good integration of the local set with indicator projects or sustainable development policies of other governmental levels
	Training	No training programmes for sustainable development or sustainability indicators within the local authority	Different training programmes for sustainable development and sustainability indicators within the local authority
4. Stakeholders' involvement	*Multi-stakeholder*	No involvement of different stakeholders outside the local authority	Broad involvement of different stakeholders outside the local authority
	Participation Mechanisms	No mechanisms/techniques for participation	Vast number of mechanisms/techniques for participation
	Feeling of Ownership	Very weak feeling of ownership by the stakeholders involved	Very strong feeling of ownership by the stakeholders involved
5. Link with local plans or strategies	*Performance*	No integration of the indicators with targets/goals inserted in local plans/strategies	Very good integration of the indicators with targets/goals inserted in local plans/strategies
	Funding	No integration with budgets and stable funding schemes	Very good integration with budgets and stable funding schemes
6. Link with (Inter)National networks	*Learning*	No involvement with other national/international indicator projects	Close involvement with other national/international indicator projects
7. Communication with society	*Communication*	No communication channels to disclose the indicators	Many and different communication channels to disclose the indicators

2) Assigning overall responsibility

The *assigning overall responsibility* criterion is considered as a determinant element for the construction and operationalisation of the indicator set over time, determining the capacity of the set to become institutionalised and inserted in the routines of the relevant actors. Two criteria deserve attention: (a) *political commitment* - the existence of a strong and sound leadership is considered important to include sustainability issues in the political agenda and provide the indicator set with the necessary resources and visibility; and (b) *sensitivity to change* - not less important, determines the vulnerability of the indicator set to political shifts. Our prime intention is to

thoroughly understand the dynamics surrounding political determination and the operational (technical) capacity to coordinate work around the indicators.

3) Government coordination

The third element, *government coordination,* is considered to be an important factor to understand, determining how knowledge is transferred around and between government units and within them. Three different criteria should be emphasized: (a) *sectoral* or horizontal coordination - it is implied that, as a transversal set, it should contribute to a stronger integration of activities and policies within the local government unit involved in the work with indicators (mainly local councils), considering that better internal coordination between many departments is not only beneficial but also needed (strengthening local internal capacity); (b) *regional* or vertical coordination - it entails a need for a stronger coordination with other tiers of government: with other municipalities at the regional level, with the national government and also transnational bodies, such as the European Union. It tries to understand the role of external governmental forces. Within the scope of the implementation of local indicators, it is of the utmost importance to evaluate this level of coordination, since it is directly related to the capacity to deal with the transboundary nature of sustainable development; and c) *training* – training programmes for public officers and elected politicians concerning sustainable development issues or indicators, meaning that more training is desirable to strengthen the ability to manage indicators and all related activities.

4) Stakeholders' involvement

According to Healey et al. (2002), there is a pertinent question when analysing the development of sustainability indicators: Who is considered to hold accredited knowledge? This raises the possibility of drawing up a 'knowledge map' which is specific for each locality, assuming different geopolitical forms in different places. Three criteria were chosen to evaluate this element: (a) *multi-stakeholder involvement* - including different stakeholders (from experts to citizens). The underlying logic is that the more different actors involved - and therefore different perspectives -, the easier it is to transform the broad notion of sustainable development into a context specific concept; (b) *participation mechanisms* - assess the openness of networks to new knowledge through the indicators, assuming that the more and different mechanisms are in place to attract different actors, the better; and (c) *feeling of ownership* - it evaluates the degree of stakeholder involvement and of trust among the actors. The stronger the feeling, the better for the operationalisation of the set in the medium and long-term.

5) Link with local plans or strategies

Considering the *link of sustainability indicators to plans or strategies* at the local level, it is important to evaluate: (a) the *performance* of indicators – indicators should try to relate to certain goals or targets attached to different local plans or strategies: the greater the integration, the better for sustainable development; and (b) the *funding* - it is important to see whether or not the indicators are integrated in local budgets or stable funding schemes, bearing in mind that if such funding does not exist, the indicator set is less likely to be updated or used.

6) Link with (Inter)National networks

The *connection to similar networks* or experiences regarding sustainability indicators is a relevant question. The *learning* criterion is therefore understood as the capability to learn from other experiences promoted externally at the national or international levels. The lesson learning capability can improve the ability to develop new and innovative ways of working (such as the ones promoted by the indicators), which should provide more flexible and open decision-making processes.

7) Communication with Society

The broader the communication channels are, the better indicators can contribute to good governance for sustainable development. Again, we reaffirm how important it is to consider indicators as new knowledge that may reinforce or disrupt power relations. Moreover, one should think about how power relations and communication strategies define what gets measured by the indicators.

5.3. Case-Study Methodology and Methods

According to Maoz, "in contrast to other research strategies in political research where authors devote considerable time and effort to document the technical aspects of their research, one often gets the impression that the use of case-study absolves the author from any kind of methodological considerations" (Maoz, in Gerring 2007, p.6). As this work is mainly built on the analysis of case-studies, we focus on the construction of the methodology, the methods and techniques used to gather the relevant data. It is important to start by underlining that we decided to adopt a dual methodological approach that has derived from a short cross-case research – quantitative analysis - although based primarily and mainly on case-studies – specially through qualitative research. This dual methodology was fruitful and according to Gerring's own experience in these matters, "reflection upon cross-case patterns, far from being a hindrance to case-study research, is, to the contrary, a helpful tool. It helps one to formulate useful insights (…) and it certainly helps one to select cases and to explain the significance of those cases" (Gerring 2007, p.27).

As aforementioned, qualitative researchers are often struggling to defend their findings, as they cannot be generalized in a statistical sense and most of the times they are 'attacked' for basing their research 'simply' on case-studies. This justifies a prudent, although short, review of some crucial aspects rejecting this 'attack' to the case-study qualitative approach.

Flyvbjerg (2006) determinantely advances five misunderstandings or oversimplifications about the nature of case-study research that we find most useful to bring into the discussion, in order to reinforce our argument in favour of a context-dependent research based on case-studies. The misunderstandings are:

1) "General, theoretical (context-independent) knowledge is more valuable than concrete, practical (context-dependent) knowledge.
2) One cannot generalize on the basis of an individual case; therefore, the case-study cannot contribute to scientific development.

3) The case-study is most useful for generating hypotheses; that is, in the first stage of a total research process, whereas other methods are more suitable for hypotheses testing and theory building.
4) The case-study contains a bias toward verification, that is, a tendency to confirm the researcher's preconceived notions.
5) It is often difficult to summarize and develop general propositions and theories on the basis of specific case-studies." (Flyvbjerg 2006, p.221)

Flyvbjerg (2006) interestingly documents several examples of authors that have modified their views about the value of case-study research, such as Donald Campbell or Hans Eysenck, from highly sceptical to enthusiastic defenders. In addition, he provides significant illustrations of creative scientists - such as Galileo, Netwon, Einstein, Darwin or Freud - whose theories developed from 'carefully chosen experiments, cases and experiences' to valid and general theories. He entirely rejects the five aforementioned misunderstandings. In accordance with Flyvbjerg's position, we assume that the most important aim of this section is not so much the justification of the case-study approach, but the justification of *how* the specific cases were chosen – what Flyvbjerg names strategic choice – and *why* the selected cases are considered 'clever cases' – what he calls strategic sampling. Explicit and clear criteria to select the cases were used and must be explained in order to carry out a valid qualitative case-study research.

Probably, the best words to justify our approach can be found in the aforementioned Flyvbjerg's book, *Making Social Science Matter*. When using Eysenck's words (1976) he states: we use case-study "not in the hope of providing anything, but rather in the hope of learning something" (Flyvbjerg 2001, p.73). It was clear to us since the beginning that it was unavoidable to understand in detail and in context the reasons for the construction of local sustainability indicators in Portugal, particularly because it was a less explored reality when compared with other European countries. We wondered if we could ever identify case-studies in Portugal, because there was very little information about this type of indicators being developed and applied at the local level. So, it was even more risky to investigate if they were challenging or changing governance contexts or not. This implied consulting several academics, public practitioners, experts, conducting several internet searches and applying a national survey to learn about the feasibility and relevance of the study at this territorial level. Surprisingly, there seemed to be a very consistent basis for such a line of research and the significance of understanding contextual factors became clear.

The following subsections will explain in more detail the methodology and the methods used. Triangulation was one of the most relevant methods used, "because the research questions (…) are complex, not easily manipulated, and in some cases not subject to direct observation, there is no best and perfect measuring instrument. Every data collection strategy and every measurement design have their own strengths and limitations. Almost any discovery identified by any single measurement only depicts parts of the whole picture. Having several sets of measures is the safest way to proceed. Triangulation is the use of several different research methods to examine the same phenomenon, and it is a very valuable research strategy" (Hu and Olshfski 2008, p.209). As also stressed by Yin (1994), a major strength of case-study data collection is the opportunity to use many different sources. In this particular research, the different data sources were: (1) A national survey; (2) Several informal contacts; (3) Interviews; (4) Direct Observations; and (5) Official and non-official documentation.

5.3.1. Selecting the Case-Studies

Selecting the case-studies involved gathering knowledge from different sources and key informants and proved to be harder than firstly expected. We started by getting a general picture of the kind of experiences with indicators that were being implemented at the local level in Portugal, since structured information was unavailable. The Portuguese Environmental Agency (APA) was the agency most likely to provide such information and, therefore, was one of the first institutions to be contacted. Informal contact was established with three persons responsible for the implementation of the National Sustainability Indicator Set (the scientific coordinator and the operational coordinators). APA applied a survey questionnaire in 2006 to 603 public and private institutions or organizations - among them all the 308 municipalities – to evaluate the level of awareness and use of sustainability indicators in Portugal at all territorial levels. They received only 105 responses (34%) from the local level and the municipalities was the group of entities that less knew about the national indicator set (see APA 2007). Data was therefore scarce. From those contacts, only one municipality was identified as being engaged in developing local sustainability indicators (Oeiras) and some other possible experiences that were emerging were referred. This hindered our intention to analyse experiences from different regions of the country which had been working with indicators for at least two or three years.

Several other contacts were established: with academics and researchers from the University of Algarve, the Technical Institute of Lisbon or the Catholic University of Oporto and with public officers from several institutions such as the National Association of Portuguese Municipalities, the Social Security Institute or with the CCRD Algarve, or even from contacts in other organizations such as ABAE or LIPOR (*Serviço Intermunicipalizado de Gestão de Resíduos do Grande Porto*). One important source of information was a survey regarding the implementation of Local Agenda 21 in Portugal (see Fidélis and Moreno Pires 2009), where a general panorama about the development of sustainability indicators to monitor Agenda 21 action plans was provided. Based on this survey, it was possible to start contacting several public officers from Local Councils or LA21 coordinators, and to gather information about those experiences and related indicators, such as starting date, type of indicators, driving-forces or current standpoint of the process. We established closer contact with the following municipalities: Oeiras, Loulé, Torres Vedras, Redondo, Santo Tirso, São João da Madeira, the Mindelo parish, Cascais, Loures, Almada, Odivelas, Maia, Mora, Aveiro, Portimão, Lagos, Tavira, Albufeira, Loulé, Chaves and Vila Real.

In addition, it was found indispensable to conduct a national survey to all of the 308 Portuguese municipalities specifically aiming to assess local experiences with sustainability indicators. In Chapter 4 the general findings of this survey were analysed, but we are forced to mention it again in order to explain some methodological options regarding its application and the way information was analysed to help select the case-studies.

The questionnaire was supposed to be brief in order to get a higher number of responses and to identify as many experiences with local sustainability indicators as possible. The main idea was to obtain general background information to map experiences in Portugal more accurately. A cover letter was sent attached to the survey, where the objectives and purposes of the survey, as well as the meaning of sustainability indicators, the relevance of the topic and the importance of receiving a response from the municipality were explained. If the municipality was not involved in any kind of local experience with sustainability indicators, it could simply state it had no relevant experience, or

it could refer to other local projects with partial indicator systems to assess specific sectors of development instead. The questionnaire had 11 questions in total, where most of them were closed questions, even if with multiple possible answers. In addition, it was always possible to add further comments or opinions in each question (see Appendix I).

In the first stage the questionnaire was sent by post to the leaders of all of the 308 Local Councils in October 2008. Then, in February 2009, a second attempt to collect more answers was carried out. This time the questionnaire was sent by email to all of the Local Councils that had not replied in the first round. This strategy boosted the percentage of responses received to 162/308, about 53% of the Portuguese municipalities. Responses were obtained from all of the seven NUTSII regions, although the response percentage was lower in the insular regions of Azores and Madeira (see Chapter 4 and its figures and map). This response rate was quite satisfactory for our purposes, in fact, even higher than expected, probably due to the simplicity of the questionnaire. As Majumdar (2008) so adequately puts it:

> *"The varied trends in response rates lead to a commonly asked question, 'what is an acceptable response rate? According to Babbie (1998, p. 182), a response rate of at least 50 percent is often considered adequate for analysis and reporting. But in the field of public administration, there appears to be no agreed upon standard for a minimum acceptable response rate. Because administrators, city and county officials and others in various government positions and departments receive multiple requests to respond to surveys from academic, professional, and government organizations, they are often overwhelmed and annoyed (O'Sullivan et al. 2003, p. 199) by such requests and sometimes fail to respond. Under such circumstances, even a study with a low response report is acceptable and can make important contributions."* (Majumdar 2008, p.242)

As mentioned before, the majority of responses (64%) were from small municipalities with less than 25,000 inhabitants and 12% from municipalities with more than 75,000 inhabitants. The most important result was from 81% of the respondent municipalities, which declared that they did not have any sustainability indicator set or were not developing one. On the other hand, 19% of the answers affirmed that they were working with sustainability indicators. This helped to choose the case-studies from the positive answers by applying specific criteria.

The most important criterion was the *timeframe* of the experience with the set: for how long was the process under development? In order to be able to understand the role of sustainability indicators in local contexts according to our research questions, it was necessary to focus on processes with at least some years of experience. This excluded municipalities only recently engaged in such processes, which were the vast majority (mostly started after 2008). We only considered indicator processes that had started at least before or around the year of 2005. This left us with very few cases to analyse. A second group of criteria aimed to gather some *evidence of success* in the development or operationalisation of the set or the in the implementation of the driving-force project, and some diversity regarding *population representativeness* and *driving-forces* whenever possible. Seven cases could meet our requirements: Redondo, Mindelo, Aveiro, Oeiras, Porto, Mora and Palmela. A critical step was to develop a closer contact with the officials responsible for those sets and to evaluate the interest of the municipality in participating in our

research project. They all demonstrated clear interest in the study, so a new journey had just begun.

After clarifying *how* and *why* our seven case-studies were chosen, we would like to describe the type of case-studies chosen. We argue that they can be considered as critical cases, because they have strategic importance to the general research problem. They represent the oldest experiences and some of the few existing projects in a country with a general local context of weak monitoring culture and fragile implementation of assessment tools. They can also be considered as maximum variation cases, in the sense that they are crucial to obtain "information about the significance of various circumstances for case process and outcome (e.g. cases that are very different in one dimension such as size, form of organization, location or budget)" (Flyvbjerg 2006, p.230). They are developed under different projects and follow different rationales – from LA21 strategies (Redondo and Mindelo) or LEP (Aveiro) to management systems (Mora) and a national indicator programme (Oeiras), together with two projects which main purpose is to monitor local sustainable development and are not part of an overall project or strategy (Oporto and Palmela). They are inserted in very different municipalities with different contexts (see Chapter 6 for further insights) and they represent experiences with mix outcomes. These enable us to understand different realities and gain knowledge on the diversity of factors that can contribute to (un)successful experiences at the local level.

5.3.2. Understanding the Case-Studies

We use qualitative methods to analyse our individual case-studies and to try to elaborate a comparative perspective between them. It is an enormous challenge to compare the seven case-studies and synthesise all of the empirical findings. Furthermore, we are aware that taking the indicators out of their context and drawing general conclusions may not make sense out of particular governance circumstances.

Developing the aforementioned ideal-criteria helped to shape the subsequent qualitative data collection and to structure and organize data-gathering and analysis. To a certain extent, it helped to avoid the drawback of massive volumes of general, unfocused data that could have overwhelmed the research. Therefore, as it is underlined by Charmaz (2004), these ideal-criteria were considered as starting points to deal with the data, to frame interview questions, to listen to interviewees, and to think analytically about the data. An interpretative researcher conducting qualitative analysis attempts to describe, explain, and understand the experiences lived by a group of people, trying to learn how they construct their experiences through their actions, intentions, beliefs, and feelings. Therefore, the researcher should not be limited to preconceived concepts or hypotheses (Charmaz, 2004). Bearing this in mind, we used NVivo for coding and data analysis which facilitated questioning our own qualitative data and previous criteria and reflecting upon the knowledge constantly produced.

We will now briefly explain how we used multiple sources of evidence in our qualitative analysis (data and method triangulation). Several documents were collected for all of the case-studies (from the minutiae of local authorities' meetings, to brochures, internal and external reports, local plans or strategies and all the relevant written material) and interviews to the most relevant actors involved in the indicator system were conducted.

Interviews represent our main data source and subsequently we will outline the process of collecting and analysing data from the interviews. Although the approach was similar to all of the case-studies, some methods were added or restricted according to the needs of each case-study. The number of interviewees also varied accordingly. The use of direct observation of a training session, for instance, was a very useful method to understand a particular aspect of one indicator set in Oeiras, but was not repeated in any other case-study. Moreover, in one of the cases (Mindelo) the sustainability indicator project was promoted at the parish level by a Local Environment Non-Governmental Organisation and a local parish. As such, we mostly interviewed those actors and not the Local Council (where this parish is located). In this particular case, it was necessary to conduct more interviews than in the other case-studies and to consider a different institutional perspective.

It is also indispensable to explain the several obstacles we faced when trying to conduct some interviews to local politicians in three of the municipalities: Oeiras, Palmela, and Oporto. We tried to establish contact several times and tried in several ways to persuade politicians to provide personal (or even written) interviews, but all in vain. The poor political interest in the study and the consequent absence of political answer from those case-studies clearly shows the little understanding of the importance of indicators for politicians in those cases. At the same time, though, this may provide indirect information about the lack of relevance that such themes have for politicians. We will come back to this point later on.

Finally, we may acknowledge a few limitations of our approach in understanding the full potential of the indicators' role in changing or challenging local governance processes. In one way, it can be argued that it would be desirable to interview many more people or organisations, namely outside the sphere of local government. Even so, in the majority of the cases, if not all, indicators were not regularly disclosed to the public, making the perceptions of citizens or other actors less interesting or significant. In addition, in order to conduct a more detailed analysis in each case-study, the number of case-studies had to be lower. The option was to adjust the detail of the analyses for a higher number of case-studies in order to allow a comparative perspective and to try to cover all the oldest Portuguese experiences with local sustainability indicators. The ultimate goal was to conduct an institutional analysis and as such we did not explore other perspectives (such as stakeholder analysis, etc.).

The Interviews

A total of 30 interviews were carried out over more than one year, from March 2008 to June 2009, and they are listed in the Appendix II. In order to assure anonymity, to strengthen informal relationships and to increase trust and transparency between the researcher and the interviewees, the interviews were numerically coded. Therefore, code numbers are used in the text as references to the citations.

The process to select the interviewees for each of the case-studies was based on a special selection, which involved several previous contacts with key informants in each municipality, mainly by email. We also conducted short interviews on the telephone beforehand in order to know more about the development process of the indicators. Key persons who worked directly with the

indicators were identified among public officers and politicians. We then formally asked for permission to interview politicians with the intention of knowing the opinion of the Mayor and/or of the politician responsible for the indicators about the indicator set and its importance. Because experiences were different from municipality to municipality, there was the need or possibility to carry out more interviews in some cases than in other cases. As the research was mainly targeting the local public organisation, it was not our primary purpose to include citizens or other local actors in the study, although in some cases we had the opportunity to interview people that were somehow involved in the process of developing the indicators but not as politicians, public officers or consultants/experts. Moreover, in some situations we interviewed two persons simultaneously, namely two public officers involved in the work with the indicators (in Aveiro, Palmela, Oeiras and Oporto).

The semi-structured interviews varied in length but they lasted in average 60 minutes. However, very few of them were conducted over the telephone (2 interviews) or per email (2 interviews). The questions (listed in Appendix III) were semi-structured in accordance with the main criteria previously set up, although the interview guide was adapted to each circumstance. The starting question was pratically the same, but the flow of the interview varied as well as the order of some pre-determined issues. Sometimes, new questions emerged. Others were altered or ignored. The main overall purpose of the interviews was always explained before the actual interview, but the interviewees never had access to the questions beforehand, although some questions had already been previously asked over the telephone. We decided not to disclose the questions beforehand in order to avoid too formal and structured answers and to allow spontaneous ideas and thoughts to flow. The aim was to create an environment where an informal conversation could be held and where public officers could be as open and transparent as possible about colleagues, working routines, the general institutional environment and other cultural or social influences. For this to work, the interviewees were explained that the interviews were anonymous.

To manage the data of the interviews in a consistent way, the interviews were recorded and faithfully transcribed in their original language: Portuguese. They were transcribed by the researcher herself. Only the citations used in the text were translated into English, with the inherent risks of a literal translation, but we tried to keep the original words as much as possible.

Studying the transcriptions helped to focus on the details, allowed to trace events, delineate processes and facilitated comparisons. As defended by Charmaz, “paying close attention to respondents’ language can help you to bridge your research participants’ lived experience with your research questions” (Charmaz 2004, p. 505). Furthermore, some authors underline that answers should not be treated as simple texts and that they should be analyzed hand in hand with the respondent’s cultural norms and body language, tone of voice, flow of speech, etc. (Fontana and Frey, 1994).

Finally, it should be highlighted that in most cases several other contacts (by email or telephone) were established after the interviews and we received feedback about the research material and findings of each case-study from some of the previously interviewed persons. Ongoing contacts are important to build a solid relationship between researchers and the relevant local actors, but this was limited due to time constraints from both the researcher and the key informants. The purpose was to get some critiques of the analysis, but also to try to ensure that the findings could be relevant for the people who work with the indicators.

In the following section, the data analysis process will be explained more specifically to understand *why* NVivo software was chosen and *how* it was used.

Computer based analysis

"Invent the piano, and a whole host of composers will start writing a new music." (Richards 2002, p.203)

The use of computer based analysis helped this research to structure and analyse the qualitative data gathered and to 'compose' our interpretations of the case-studies and 'write a new music' about the role of local sustainability indicators in Portugal. In this section we aim to briefly explain the advantages and limitations we have encountered in this type of analysis.

As Ozkan stresses when doing interpretivist research, "this holistic approach [interpretivist research paradigm] of data analysis and a strategy that could be termed "reflective-interpretive" fits well with the use of NVivo. The software package does not force the use of certain data analysis strategies, but provides the researchers with various tools which they can choose from based on their research goals and ways of approaching their data" (Ozkan 2004, p. 593). The capacity of NVivo to allow the researcher to make decisions about data organisation, coding, data query and analysis is a major advantage. Computer analysis can add rigor to the research but they do not *per se* provide instantaneous quality and prestige to the analysis. The use of software can improve handling lots of qualitative data effectively and guarantees a systematic analysis and comprehensive processing (transcription, coding, interpreting). But it is the way researchers handle their data that ensures rigor to the study (Ozkan, 2004).

In this research, we chose NVivo because it allows an interactive analysis of data as well as its continuous questioning. As one of the creators of NVivo underlines: "much qualitative research is an interaction between researcher and text, in which ideas form and change, perceptions evolve, and insights and conclusions become the bases for further study, for further insights and conclusions, in a revolving process that need never stop" (Richards 2002, p.201).

The major disadvantage is that NVivo is very time-consuming at first, for it takes some time to get familiar with the practical potentialities and concepts, such as links, memos, attributes, categories, nodes, queries. In addition, the process of coding the data is very long. Coding means selecting and condensing statements or pieces of statements in one category defined by the researcher. However, after this long task, the process of interpreting large amounts of qualitative data becomes much easier and more accurate than manual approaches (Ozkan 2004). As Bazeley explains, the use of a computer programme is not intended to replace 'time-honoured' ways of learning from data, but to increase the effectiveness and efficiency of such learning (Bazeley 2007).

Charmaz argues for this interactive study of data stating that "as you gather more data, you will find that some respondents or events make explicit what was implicit in earlier respondents' statements or prior events. This kind of 'Aha! Now I understand!' experience prompts you to return to an earlier respondent to explore an event or issue that you may have glossed over before or that may have been too implicit or unstated to see" (Charmaz 2004, p. 508-9).

Finally, it is important to provide some lines that summarize our main steps in this idea forming and changing, through the information collected:

(1) The first step was to transfer to the NVivo Document browser memo notes, observation notes, official plans and all the interview files (the transcriptions of the interviews) and created cases for each of the interviews.

(2) Then, the cases were classified according to their attributes (municipality, gender, function, and role in the indicator project). This information was helpful to compare data of subgroups of attributes.

(3) The next and probably the most crucial step was coding the interviews. At the beginning, all the nodes were previously created to fit in the ideal criteria and sub-criteria considered important to answer the research questions. During the coding process, the phrases, sometimes all paragraphs, sometimes a single word, were highlighted or commented. Several memos were written in dialog boxes and research notes were drafted and also coded and were permanently undergoing changes.

(4) After finishing the coding process, all the nodes were reviewed to see the patterns that emerged from the study and some queries were done to ask questions to the data (such as the occurrence of a word or words, patterns of coding, or comparison of groups).

All the process was extremely helpful in putting together all the relevant data to draw conclusions.

5.4. Concluding remarks

This Chapter is strategically placed before the presentation of the case-studies, to better provide an account of how the empirical research was structured. It was also decisively located after the literature review that supported the understanding of the type of institutional analysis and its connection to the research questions and aims. It is now time to turn to the particular insights of the research and to take a closer look to our case-studies.

CHAPTER 6
ANALYSING THE CASE-STUDIES

We use the case-studies "not in the hope of providing anything, but rather in the hope of learning something" (Flyvbjerg 2001, p.73)

6.1. Introduction

After the earlier exploration of the Portuguese reality regarding the implementation of sustainability indicators at different territorial levels, this Chapter aims to concentrate on the essence of this research and explore the empirical material of the selected seven local sustainability indicator sets. They represent experiences from distinct municipalities, with very different characteristics and governance contexts.

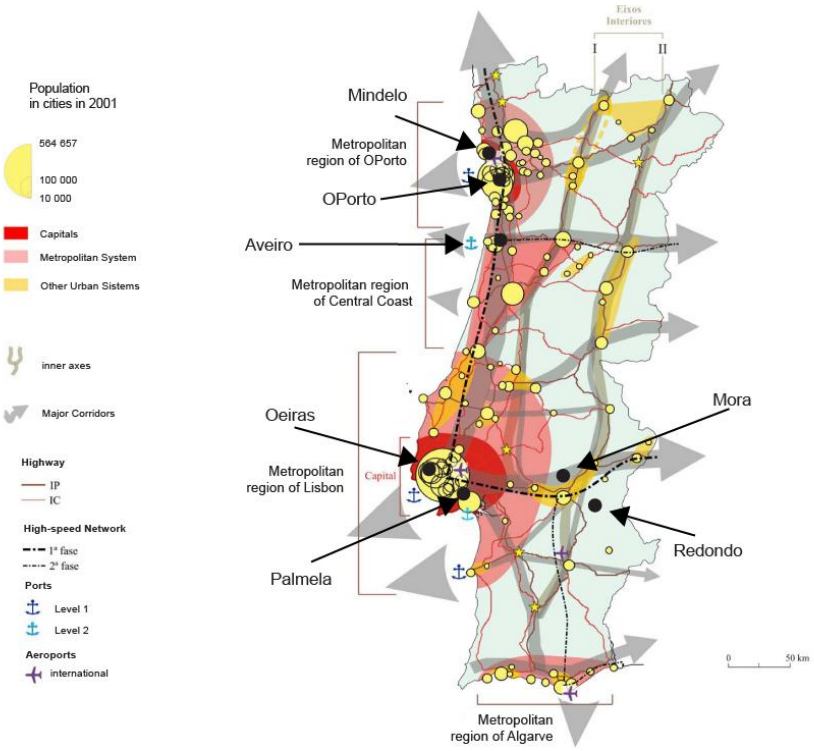
From Table 6.1 and Maps 6.1 and 6.2, it is possible to see some of these dissimilarities in terms of location, number of inhabitants and local government features – regarding the number of employees or municipal funds, political parties in power as well as the time of the Mayor's mandate. The local indicator systems have also rather diverse driving forces behind the efforts to develop them. Therefore, it is necessary to understand the behaviour of the indicators in their specific context to comprehend the main institutional and discursive aspects around their development.

Table 6.1 – The municipalities and the selected sustainability indicator sets

Municipality	Redondo	Mindelo local parish	Aveiro	Oeiras	Oporto	Mora	Palmela
Name of the Indicator System	Sustainability Indicators of Redondo	Sustainability Indicators of Mindelo	Matrix of Local Sustainable Development Indicators	ECOXXI	Monitoring System on Urban Quality of Life	Indicators of the Integrated Management System	Indicator Set for Land-Use Monitoring of Palmela
Date[1]	2005	2005	2005	2005	2003	2006	2004
Last Updated	2005	2005	2005	2007	2010	2010	2010
Driving-Force	Local Agenda 21	Local Agenda 21	Local Environmental and SD Plan	ECOXXI project	Urban Audit Project	Management Systems	Land-use planning and monitoring
Population[2]	6 676	3.402[3]	73.100	172 021	216 080	5 231	62 820
NºEmployees at the LC	324 (2009)	/	659 (2008)	1886 (2010)[4]	2865 (2008)	139 (2009)	1027 (2009)
Municipal Funds 2008[5]	4 684 529 €	/	9 190 900 €	18 443 493 €	26 327 872 €	4 574 412 €	7 845 585 €
Political Party in Power[6]	Independent	/	PS	Independent	PSD/CDS	PCP	PCP
Years in power of the Mayor in 2009	>12	/	*	>12	8	>12	8

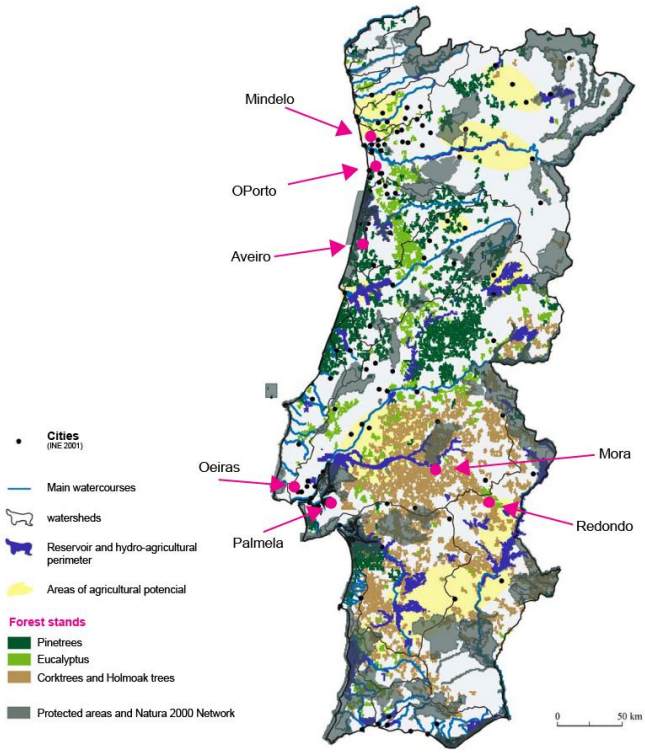
[1] Year of Establishment
[2] in 31/12/2008 (Source: INE, 2009)
[3] Census 2001 (INE, 2001)
[4] in September 2010 (Source: CMO in 09.2010)
[5] www.anmp.pt (consulted in 10.02.2010)
[6] At the beginning of the project
* In 2005, PSD/CDS replaced PS and has remained in power since then.

Map 6.1 - The location of the case-studies, the urban system and accessibilities in Portugal



Source: DGOTDU (2007)

Map 6.2 - The location of the case-studies, the natural and agro-forestry systems in Portugal



Source: DGOTDU (2007)

Each case-study is examined through a similar analytical framework as justified in Chapter 5, that is divided in four main parts. To recall what has been explained in Chapter 5:

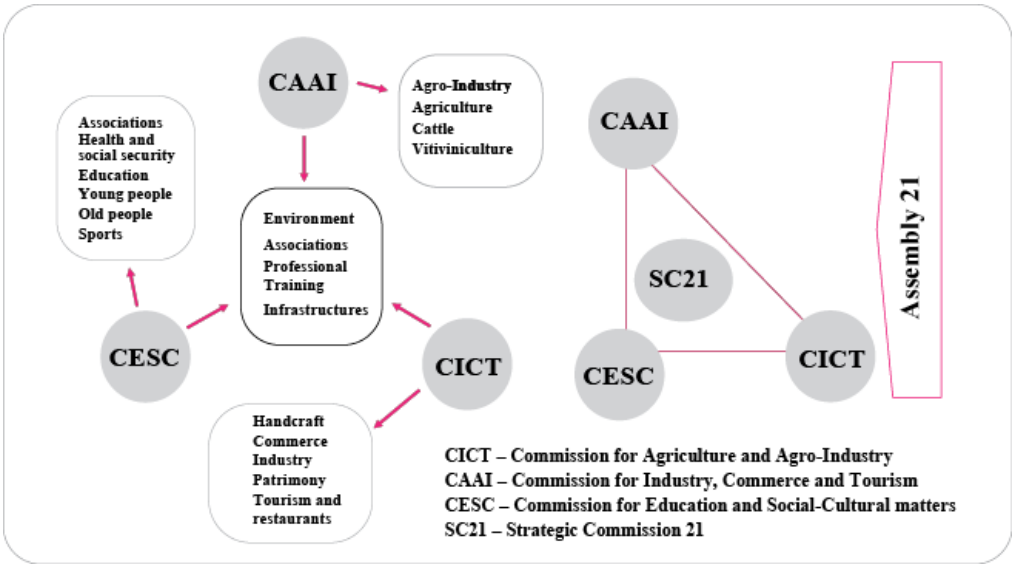
1) The first part tries to provide background information around the development of each specific sustainability indicator system and to broadly describe the administrative context and the existing driving-force projects.
2) The second part aims to summarize the main features of the sets, reviewing their scope, number and type of indicators, their functions, aims and target groups, fact sheets, among others.
3) The third part specifically considers the process of developing the indicator system and the actors involved, paying particular attention to the role of experts, policy-makers, public officers and other actors involved.
4) The fourth and final part starts organizing the material gathered with the purpose of answering the two major operational questions nurturing the investigation on the case-studies. It aims to explain the attitudes, perspectives, interpretations and positions of the interviewees towards the importance of the indicators for local governance, towards the governance changes and challenges induced by the their development and the way they have raised issues of legitimacy, accountability, efficiency and democracy at the local level, and, finally, towards the different type of uses of the indicators.

6.2. The Case of Redondo – Developing a Participative Local Agenda 21 and the Need for Monitoring

The driving-force project and administrative context

With the impetus of the Mayor of the Local Council, that was also at the time president of the Regional Association of Local Councils of the Évora District, the decision to start a LA21 in Redondo's municipality occurred in 2003[1]. The Regional Association was able to apply for European funds that provided the financial resources to start such a process at the local level. Agenda 21 was perceived as a new and different project for Redondo's municipality that could bring new ideas and a more trustful and broad diagnosis of the problems and strengths of the municipality. It was also foreseen as a project that could 'provoke' citizens, 'forcing' them to be more active and 'enterprising', and allowed the establishment of goals and actions with the population (Interviews and 9). A team of experts was hired to provide technical support for the process and the first main step was to make a general diagnosis of Redondo. At this stage, the population and several local actors were invited to participate and it was then possible to identify three Strategic Domains for the municipality. Those domains were considered as crucial and for each of them a Thematic Commission was created (see Figure 6.1).

Figure 6.1 – Public participation structure in the Redondo LA21



Parallel to the work of these Commissions, a general coordination body was formed, the *Strategic Commission 21* (SC21)[2]. The *Assembly 21*, another participative body, functioned as an open forum for the discussion of proposals with the population. Different strategies were debated within these structures and in 2005 the LA21 Action Plan of Redondo was approved by the *Assembly 21* and the Local Council.

[1] Redondo, together with Arraiolos, were the only two municipalities that decided to start a LA21 after the impulse of the Association of Local Authorities of the Évora District (composed by 13 municipalities) and the financial support of European Funds.

[2] Composed by three experts from the technical team, two civil servants and one politician from the Local council, one representative of each main sector of activity and representatives of the two parishes, which makes a total of 21 members.

The main merit of this process was its highly participative nature, which revealed to be a true example of the dynamics generated between the population and the SC21. Nearly 55 round-tables with the population were held as well as several workshops in all the small parishes of the municipality, involving more than 800 people and in a time span of 100 hours. Even though, at the level of the local council, few changes have occurred within its structures and work. Despite the involvement of the political executive body, there was only one public officer, the LA21 coordinator, dedicated fulltime to that task. Moreover, besides an information session with other public officers and employees of the local council, no further input was asked from the different services and departments for the elaboration of the strategy. The goal was clearly to challenge the way the local council would interact with 'outsiders'- with the population and local actors -, and not to challenge inside working practices or routines.

Nevertheless, after the approval of the action plan in 2005, no more participative debates took place and Agenda 21 seems to have been dismissed and even if still nurturing some political initiatives, the plan is clearly not followed as a main strategy. After some years, the whole Agenda 21 process was not assessed and the indicators have not been gathered. Furthermore, the responsibility for the project was somehow diluted as another person, who had not fully participated in the whole process, was appointed to coordinate the project.

The main features of the indicator system

Table 6.2 – Outline of Redondo Indicator System

Responsibility for the Project	Team of experts and LA21 Strategic Commission 21
Main Goals	Monitor the actions proposed by Agenda 21 Action Plan and assess progress towards SD for the whole municipality.
Dimensions of SD/ Conceptual Model	Subset 1 (six themes); Subset 3 (four dimensions of SD: territory; population and social conditions; economic activity and environment and energy)
Nº of Indicators (170 in total)	Subset 1: 83 performance indicators linked to 25 different actions to monitor its implementation.
	Subset 2: 5 indicators to evaluate the degree of implementation of the global action plan
	Subset 3: 72 indicators in accordance with the Pressure-State-Response (PSR) framework.
	Subset 4: the 10 European Common Indicators (ECI).
Headline Ind.	No
Fact Sheet Items	Subset 1 (name, periodicity and data sources); Subset 3 (type according to the PSR model and year of last measurement)
Criteria	Data to be available (mainly using data from the LA21 diagnosis); to be relevant; to allow comparisons with legal requirements and other targets or strategies at different territorial levels, like the NSSD; to be easy and quick to determine and interprete; to be important and scientific valide and with low implementation costs.
Target Group	Not explicitly defined. It is implicit that all sets are for all stakeholders involved in the LA21 process, from citizens to local organisations and local decision-makers.
Communication Strategy	Not considered nor defined.

Redondo proposed a set of 170 indicators, divided into 4 different subsets with different purposes, in a complex web of information and statistics, as depicted in Table 6.2 (see also Appendix IV). Moreover, the need to clearly identify specific target groups for the different subsets was not recognised, which implicitly meant that all indicators were suitable for all the community (from citizens to local stakeholders or the local council). No targets or specific goals were established, even for the subset that was intentionally proposed to monitor the actions of the LA21 plan.

In addition, no communication strategy was defined and no responsibility for the collection and management of the indicators was assigned to any of the involved stakeholders or LA21 structures, or even to any department or service of the local council.

The process of developing the indicator system and the actors involved

The process of deciding which indicators to choose for monitoring the LA21 strategy only started after the definition of the different actions. It was mainly a result of an expert based work, although it used as a basis all the information collected from the participative process.

> "The initiative for the design and public proposal of the battery of indicators lay with the team of experts that followed the LA21 of Redondo. Indeed, it could only have been done this way, given the complexity and multidisciplinary nature of the knowledge under scrutiny." (Interview 10)

After the participative definition of the main actions for a sustainable future for Redondo, one consultant from the team of experts started to work out the set alone.

> "The work was done in relative isolation, though in permanent contact with the team of experts and with the local council." (Interview 10)

The purpose was to establish a group of indicators that could assess the outcomes of the actions, at the same time that it could be useful for several different stakeholders, from the local and regional to the national level, within a promotional marketing perspective.

The main steps to build the indicator set were as follows: a first division of the indicators by themes, followed by a comprehensive bibliography review of other initiatives and several contacts with renowned experts in the area in Portugal and Spain. The attendance of a seminar promoted by the regional sustainability indicator set of Algarve was considered very helpful for the decision that led to the conceptual framework and the indicators. After those stages, several criteria were further considered and used to decide about which data and indicators to apply. The most important criteria stated in the interviews were: availability of information, scientific validity, representativeness, capability to react to change, possibility to compare with legal criteria or other targets (namely the ones established at the 2000 National Sustainable Development Indicator System), to be easy to calculate and to interpret and finally the feasibility, low costs and benefits of its implementation.

This 'solitary' work of choosing the best indicators has produced a long list of variables and indicators that were divided into four different subsets:

1. **Process Indicators** – to monitor the actions provided in the LA21 Action Plan.
2. **Indicators of the action Plan** – to monitor the implementation of the Action Plan as a whole and its global performance level.
3. **Sustainable Development Indicators of the LA21** – to assess the level of "change" in the municipality towards sustainable development.
4. **European Indicators** - to provide objective and comparable data regarding progress towards sustainable development all over Europe. (CMR 2005, p.64-65).

The first subset was particularly targeting LA21 actions and was composed of a list of 83 indicators to monitor each action within the six agreed strategies ('support for economic development and knowledge'; 'promotion of Redondo municipality'; 'Redondo: a green and blue municipality'; 'social development and well-being'; 'improvement of living conditions of the population'; and, 'citizenship and participation').

The second subset was basically composed of 5 equations to analyse the implementation degree of the whole plan (such as the percentage of actions totally implemented in one year, etc.).

The third subset was framed according to the PSR model and provided 72 more indicators with the broader aim of assessing local sustainable development in the long-term in Redondo. Only this subset uses the PSR framework with the purpose of reflecting the same option as recommended by OECD and also because it is the same conceptual framework chosen for the 2000 National Sustainable Development Indicator System. It receives input from variables that were included in the LA21 diagnosis and from local statistics that can be available from census data. In the end, it is a group of accessible variables divided among different areas: territory, population and social conditions, environment and energy, and economic activity.

Finally, the fourth subset reflects the adoption of the 10 European Common Indicators as another separate entity of the whole system, not seeking comparisons between the indicators already defined for the other subsets or any kind of harmonization between so many indicators.

The proposal to adopt the four different subsets was formalised and publicly discussed in the SC21. Few changes were made to this proposal and no further mechanisms were applied to start a broader debate regarding the indicators. The final set was approved by the *Assembly 21* and included in the Action Plan of Redondo 21. Since then, the set has remained unused, with no information collected. No communication channels were defined and the situation was aggravated by the fact that no department was made directly responsible for the indicators.

The importance of the set for local governance and its different uses

Importance of the set in the context of local sustainable development

The comprehensive list of quantitative indicators that was adopted was the result of the direct involvement of one expert. This expert-based work provided a long list of indicators that generated the feeling that people had nothing to add or to criticise and that their knowledge was not 'enough' to argue against such a technical and apparently 'perfect' proposal.

> "Generally, people have agreed. On the one hand, it was…it was a very extensive list, there was nothing to add or change". (Interview 6)

This feeling was in accordance with the general perspective among the SC21 members that the population was not able to debate and discuss indicators or monitoring tools, as indicators were perceived by all as tools that are too complex and scientific for such a broad debate. Indicators are seen as a merely technical matter.

> "From the technical point of view, this meant, of course, that there was a wide gap of knowledge. People that usually worked with this [the team of experts] had a great understanding of it. Then, there were some people that had local knowledge, but that would never question the technical knowledge of the team of experts… and neither did I, although to a different degree." (Interview 6)

> "We are convinced that it would be very difficult to mobilize development actors, and even more so for the general public to discuss separately which indicator system to apply. It isn't an easy subject, in academic circles, let alone in rural settings in the interior of the country." (Interview 10)

The team of experts and the LA21 coordinator do realise the importance of having updated indicators not only as mechanisms that can enable the monitoring of outcomes of the LA21 strategy, but also as mechanisms that can ensure trust and transparency, so that citizens would feel that their participative efforts were useful and used, as well as mechanisms that could show the population that the process was being implemented.

> "It's important to understand what is going well and what is going badly. But it's also important to show people that their involvement and that their time was well spent. And people have to be aware that they've contributed to achieving several goals and are able to see them… If people realize that their participation has had an impact and that something was created out of it, then people would feel more confident and more willing to cooperate again…" (Interview 6)

Nevertheless, this position did not seem to find any support in two crucial aspects regarding the process of defining the indicators. In the first place, there was a clear contradiction between the criteria firstly considered important and the set that was developed. Items such as 'easy to collect, calculate and interpret" and "the feasibility and costs of its implementation" for such a small municipality were clearly dismissed – although rhetorically assumed – in such a long and incoherent list of variables. If the population was the main target of the indicators, there should have been a concern for a shorter headline list of indicators, for a clear communication strategy, or for a stronger attempt to design a single and integrated set. In the second place, an important and somewhat neglected issue was the non-definition of specific target groups for those indicators. As it was already stressed, all indicators were considered important for all stakeholders and so the coordination team did not think about specific target groups for different indicator subsets with different aims.

> "I: Who was the target group for the indicators?
> X: We never thought about that." (Interview 6)

Although they also perceived indicators as necessary for decision-making, this does not seem to be the primary concern of experts and public officers. Furthermore, they feel that politicians do not care about the set nor consider it important. According to them, the only political concern is with some of the actions and not with indicators.

> "They [politicians] don't give much significance to the indicators, but to some of the actions, they do." (Interview 6)

Nevertheless, they agree that the incorporation of the indicator system had also a role of providing extra credibility and political commitment for the defined actions and for the strategy itself. The inclusion of the indicators functioned as a 'guarantee tool' for the implementation of the actions as well as a 'proof of transparency' for the whole Agenda 21 process. However, in this sense, what happens to that credibility and transparency, if the set is not implemented? And what consequences can occur when a greater involvement of the population in such a participatory project is set aside?

According to the local politicians in power, the municipality of Redondo does not have environmental problems and the most problematic issues for sustainable development are related to economic activity, jobs and their social impacts. Politicians considered that Local Agenda 21 was a very interesting project that could make citizens more willing to innovate, to create their jobs and to be 'more active' in and for the region. LA21 was a new way of policy-making and, as financial support was secured by European funds, politicians did see the project as a way of providing in the very least a more transparent diagnosis of the main problems and solutions of and for the village.

> "I: How important was Agenda 21 and public participation?
> X: They've shown some new information and have confirmed some other. One thing is our perception, another is its confirmation. And Agenda 21 helped to confirm this need to support touristic activity, for instance." (Interview 9)

The indicator set included in the action plan was however unknown for politicians as the quote below can show:

> "I: How important is the indicator system, developed in the context of the LA21, for local governance?
> X: Are we talking about indicators? Indicators, such as the school attendance rate, or the lack of school success?
> I: No, not that kind of statistics….
> X: Yes, I don't like them either!
> I: I'm talking about the indicator system that was a result of the LA21, what importance did you attach to it?
> X: Lets look at two situations. If we have, via LA21, information regarding school success, for instance (…) those indicators are useful. Take as an example that for the last two years we've introduced subjects that people prefer, such as IT, economics (…). One of the conclusions that I recall from LA21 and that was a result of those indicators was the need to complement their training after they leave school (…)." (Interview 9)

It seems that the participatory process is considered to have already provided them with enough information for decision-making. For the Local Councillor there was a vague idea that indicators were part of the action plan, but without actually knowing about them or the different subsets, for instance. Nevertheless, they feel it would be important to have those indicators in place and do recognise their role in the context of public participation:

> "First, assess the measures and then keep the public informed, since there was public participation. Otherwise, there would be no need. But there was participation. And if there was, it should inform. The indicator has the obligation to say 'if this was not done, why it wasn't'." (Interview 8)

But it seems that this is a rhetorical feeling, as they do not consider indicators a top priority. When asked about the intention to operationalize the set in a near future, there was only an illusive answer about the need to make a balance of the actions carried out and not a clear purpose to implement and use the indicators. Clearly, the indicator set was an expert initiative with weak support from politicians that do not see them as strategic tools and do not feel the need to use them in the decision-making processes.

Governance changes and challenges

Several problems were already recognized in the local set, such as the lack of coherence among the local subsets developed, the lack of clear links to targets and goals, the high number of indicators proposed and their statistics-orientated nature, the lack of definition of clear target groups, the poor placement of the overall responsibility and the poor communication strategy. The chance for the indicator set to transform governance procedures or to alter the relationships among different actors was imperceptible. It was also clear that poor political commitment towards the indicators and a development process only based on technical inputs of experts did not provide a consistent basis for the institutionalisation of the set at the local level and undermined its potential for change.

One main general reason to explain some of those problems was the assumption of a common problem of the Portuguese local planning culture and reality: the lack of support of monitoring strategies after the elaboration of plans or programmes.

> "Small Local Authorities like Redondo have scarce resources and several competencies and almost all their actions end up being *ad-hoc*, not resulting from any plan or programme, but only from arbitrary priorities and political timings that shift with the wind. There's a clear need for formal support and guidelines from the central government as well as the corresponding financial incentives with regard to the development of local indicator systems". (Interview 6)

Other reasons are related to stable funding schemes to support those projects that are difficult issues for small municipalities; leadership and commitment are vital requirements to provide a strong basis for their implementation, but are also often neglected. If Local Agenda 21 would be perceived by politicians as a long-term project and not a short-term participative process, this could increase the possibility to create financial and organisational conditions for its continuity. A particular challenge is the need to create multidisciplinary and transversal coordination groups or

supervision bodies for the continuity of Agenda 21 processes. And this is particularly true for Redondo, since LA21 was very much dependent on the technical team on the one hand – who stopped collaboration with the local council as soon as the action plan was defined and the funding was over – and on a single public officer on the other hand – the LA21 coordinator –who since then has changed functions and responsibilities. Coordination for the project was therefore transferred to another service and another public officer that was not directly involved in the process, accumulating LA21 tasks along with many others.

Concerns to implement a new strategy for Redondo based on the input of citizens and the contribution of different local actors were taken seriously and Agenda 21 was indeed a process that has demonstrated the capacity for those common actions towards sustainable development. But this process can be undermined if stakeholders do not see their efforts recognised by the implementation of the actions or even if they do not feel that Agenda 21 is a long-term process.

Another particular difficulty is the communication of public information in general, not only for 'outsiders', but also for 'insiders' - within departments of the local council. The need to change mentalities concerning the provision of information gathered by the activities of different services and departments and the need to increase transparency and accountability are still very high. Even though the situation is improving, there is still a feeling that information is confidential and therefore that there is no need to share it.

> "It's complicated even for me and I had to insist 3 or 4 times with the accounting department because there had never been such a practice, there was not even a habit of giving information [for other services within the local council]. Now, in the last few years there has been a better understanding of that. Today, communication is done with less excessive caution." (Interview 6)

Finally, in the case of Redondo it is interesting to highlight the importance of the role of the Association of Local Councils of the Évora District in the implementation of the Agenda 21. For all the interviewees, this Regional Association plays a key role in the development of Redondo and in the region, together with the University of Évora. With their prominent position, they could have technical and financial capacities to push for a common indicator structure for the region and could promote awareness about the importance of developing those sets for the local context.

Different uses of the set

So far, the indicator set was not operationalized and thus there were no practical (instrumental) outcomes. Data has not been collected and systematised, even if some of it is easily available and already collected for other purposes.

> "We give information to a number of national indicator systems: to the National Statistics Institute, to the Professional Training and Employment Institute, to the Regional Direction for Culture, to the Regional Direction for Education, for instance … even to the 'Eugénio de Almeida' Foundation, which is a private foundation. This information is sent, but it is never systematised, it's never used, because those entities don't share it." (Interview 6)

No importance or significance was attached to the indicators after the publication of the action plan and, in general, the benefits of having an effective indicator set are not recognised, mainly by politicians.

Finally, considering the possible uses that developing indicators could have brought for conceptual changes, it seems that once again there was a small room for those changes to happen. Conceptual changes did occur while discussing the LA21 strategy but the indicators did not have any further role to challenge this, because there was only one person (of the team of experts) involved in their choice. Although they were selected from the conclusions of the participative process, this has limited the potential role for indicators to increase awareness of sustainable development issues and to contribute for better local governance.

6.3. The Case of Mindelo – A Civil Society Movement and the Role of Local Agenda 21 Indicators

The driving-force project and administrative context

In Mindelo, as in Redondo, the process of designing and choosing the sustainability indicators is associated with the Local Agenda 21 (LA21) process, which makes it difficult to detach those indicators from the LA21 itself. Consequently, understanding the context of the development of the LA21 is essential to understand the indicators as a specific step of that broader project.

Mindelo LA21 made its initial steps in 2003 and it was considered a pioneering experience at the time in Portugal, essentially because it was the first LA21 process being developed at the level of a local parish and also because it was an initiative promoted by a local environment non-governmental organization (ENGO) and not a local government. The impetus to start such a process was based on strong ecological concerns involving a protected area for nature conservation, which also was the basis for the need to create the ENGO "*Associação dos Amigos do Mindelo para a Defesa do Ambiente*" in 1992 in the first place. The main motto for the initiative was the need to strengthen consensus-building among different local actors and citizens regarding a conflict area, where urban pressures and environmental conservation goals were colliding. Moreover, it also intended to broadly discuss the meaning of sustainable development for Mindelo. The ENGO fought to convince the local parish of Mindelo, as well as the city council of Vila do Conde, along with all the political parties of the region, to be key partners in this project. Also, in order to legitimise the process and increase credibility and expertise, it was thought best to have an external consultant and the University of Aveiro, through the IDAD (*Instituto do Ambiente e Desenvolvimento* – Environment and Development Institute), played a decisive role here. Therefore, a *steering group* was created to coordinate the process, involving the local ENGO, experts from the IDAD, decisions-makers from the local parish and local council, and representatives from all the political parties.

As public participation was anticipated to be the biggest asset for success, several initiatives were developed throughout the process to bring citizens and several local actors into the discussion: letters and bulletins were sent to every household, "outdoors" were used, questionnaires applied to the population, inquiries to dairy farms and several interventions on the local media. An extensive diagnosis, named Sustainability Report, was prepared by the IDAD with inputs from those initiatives and was largely disclosed in the village. The following step was the discussion in two major participative workshops about the vision for the future of Mindelo, key priorities and the actions required. Following the main conclusions, the IDAD finished the Local Action and Monitoring Plan, comprising planned measures, goals and indicators, persons responsible for the implementation of the proposed actions, priorities and required resources. The indicator set was a key figure for monitoring the plan and its impacts.

In 2005, the Action Plan was approved by the local parish of Mindelo, which was always a crucial stakeholder in the process. Not only has it incorporated the plan into its activities, but is \since then sharing its responsibilities with the ENGO on environmental issues. This relationship of trust was clearly enforced by the LA21 process. The same seems not to apply for the local council of Vila do Conde. Although it was involved in and approved this bottom-up initiative, it has not supported it as

a project of the city council, with a consequent lack of implementation of several actions directly dependent on them, as well as poor political interest to discuss those matters (in interviews). In 2007, the *steering group* (enlarged to incorporate the participation of local companies and the local Police) came together for the first time since the plan was approved, with the purpose of evaluating the implementation of actions and their impact. A progress report was made, although, as we will further see, in a superficial way not mentioning the indicator set. Nevertheless, the implementation of most of the actions was a clear positive balance (see AAMDA 2007).

The main features of the indicator system

Table 6.3 – Outline of Mindelo Indicator System

Responsibility for the Indicators	Responsibility for the indicators established in the Action Plan belongs to a *team of experts* who should monitor the indicators performance, assure the adaptability of actions across time and space, disseminate information, verify public's acceptance of actions and present progress reports. This team was never established and the monitoring function remained on the LA21 *steering-group,* coordinated by the ENGO "Amigos do Mindelo", and ultimately on the ENGO itself.
Main Goals	To monitor evolution of local environmental conditions as well as the impact of the implementation of the LA21 Action Plan for local sustainable development.
Dimensions of SD/ Conceptual Model	Mainly focused on Environment and Land-use Planning covering as main issues: water; land-use planning and quality of life; biodiversity and rural landscape; urban solid waste. The DPSIR model is used to support the conceptual framework
Nº of Indicators	18 indicators (16 quantitative and 2 qualitative indicators)
Headline Ind.	No
Fact Sheet Items	Related action; DPSIR specification; number; name of indicator; base value; target to achieve in 2010; unit of measurement; source; periodicity of data collection; value; performance evaluation with stoplight colours and smileys.
Criteria	Criteria are not defined in the Action Plan. According to the interviews, they were defined as: importance of the connection with the actions; degree of comparability with other indicators from national (national SIDS and ECOXXI indicators) and European sets (ECI); local appropriateness.
Target Group	Local population, local organisations and companies, as well as local councils.
Communication Strategy	There should be a revision of the indicators selected in the Action Plan every two years. However, no mechanisms were developed to collect any data. The indicators were never updated or disclosed.

For each indicator there was one specific target to achieve in 2010 and the main objective was to follow trends and to use stoplight colours and smileys to evaluate the performance of each indicator. Although the DPSIR model was chosen to frame the indicators, when looking carefully to the set, it is clear that there are only State and Response indicators and one Impact indicator. There are no Driving-force or Pressure indicators. They incorporate traditional environmental issues, such as quality of water, recycling, sustainable agriculture or use of bicycles and also include several indicators to assess public participation and public awareness on sustainability related issues. Interestingly, the indicator set is small, only based on 18 indicators, including 2 qualitative indicators: the perception of the quality of life in Mindelo by their citizens and their satisfaction with the local community (see Appendix V).

The process of developing the indicator system and the actors involved

The indicator set was mainly developed with the input of the team of experts from the IDAD. It was a result of several discussions with different local actors and citizens about the main problems to tackle and the key areas to act upon over a period of 6 years (2004-2010). Nevertheless, there was not a clear intention from the ENGO, the local parish or even from the IDAD, to involve citizens and other local actors in the selection of the indicators.

After the consolidation of the main outcomes from the broad participative process of LA21, the IDAD started to analyse which indicators could better represent the defined actions. The main goals for choosing the indicators were the need to provide some answers to such questions: was the present resources capacity being optimized? Were environmental tools used to support decision-making? Did the population understand the meaning of sustainable development? Was the population aware of current problems (IDAD 2005)? The indicator set proposed by the IDAD was afterwards validated by the ENGO and by the local parish. After agreement on the indicators and on the need to use them, there was a period of public consultation involving the broader plan. There were no significant changes to the set initially proposed.

The set is visibly shaped for Mindelo's context and particularly targets the population, but because citizens were not involved in the choice of the indicators, they did not understand their importance or feel committed to them. In addition, the human and financial resources needed to collect data for the set were high, mainly resulting from a large number of questionnaires to be applied to the local population every two years. These two reasons may have undermined the update and effective implementation of the set. Criteria such as availability of data or information easy to collect were dismissed when the indicators were defined. However, there was an important intention to harmonise the set with some indicators proposed by the European Common Indicators, as well as by the ECOXXI project (that was in its experimental year at the time) and by the 2000 NSDIS.

Furthermore, the team responsible for monitoring the set, as it was defined in the Action Plan, was not created. Instead, in 2007 the *steering group* has produced an isolated evaluation of the plan through a progress report. This report was merely an empirical assessment of the implementation degree of each action based on the opinion of its members, without using any indicator or other information besides that.

The importance of the set for local governance and its different uses

Importance of the set in the context of local sustainable development

The indicator set was considered a technical part of the LA21 process that needed technical expertise to be developed, although summarizing the main ideas and actions for sustainable development in Mindelo as a result of a broad participative process. All the interviews to the three main stakeholders (ENGO, team of experts, and the local parish politicians) have shown that they all understand indicators as tools that should be designed by scientists or experts. Local citizens are considered as the indicators' preferred target group, but are not recognised as a key group that should participate in their design. This quote illustrates that:

> (…) "people, in general, don't have much idea of what an indicator is and this is where the technical work plays a role in translating what people want (…) I think that indicators are much more on the technical side that on the public participation side." (Interview 11)

This is in line with the feeling they share regarding the difficulty of citizens to be knowledgeable and capable of discussing about indicators or other assessment tools. One of the persons from the intermunicipal company of waste management of Great Oporto involved in the process, underlined the same argument:

> "The indicator set was developed at a technical level, a team was hired that defined the indicators bearing in mind the outcomes of the participative process. It wouldn't make sense either for it to be the population to define the indicators, but only the actions." (Interview 16)

In addition to this influence of experts in the choice and design of the indicators there were also arguments strengthening the need for quantitative data, for scientific validity and reliability of the indicators.

> "The ideal system would be one which showed a high degree of precision, that was easy to monitor and available to everyone." (Interview 11)

To a certain extent these positions are somehow contradictory to the use of qualitative indicators in the defined system. The criteria used to tailor the indicators seem also to support this apparent contradiction, as experts were not worried about the capacity for indicators to be measurable, or to have data easily available and at low costs. They preferred indicators that could be compared with other regions and mainly that could be locally relevant, with a strong focus on assessments of public perceptions regarding local development trends and quality of life.

The set represents an input of experts to fulfil one step of an 'ideal' LA21 process, supported by the awareness of the ENGO and the local parish of their importance, but where no concrete commitment to indicators was enforced by any stakeholder in particular. Responsibilities were not defined regarding its monitoring and communication tools were not thought of. Apart from a short consideration about graphical options to demonstrate the indicators trends, there were no further considerations about who should collect and release the indicators, when, where and how. This has probably led the set to be forgotten at some point, particularly when it became irrelevant to the mid-term evaluation in 2007.

A curious fact to take into account is that politicians from the local parish and politicians from the city's council have opposing perspectives on the indicators. The local parish is absolutely aware of the need to have indicators, mainly environmental indicators, to support decision-making, as almost 80 percent of their decisions concern environmental issues. But in the end, it delegates the responsibility for the set, as well as for the implementation of many actions, to the hands of the ENGO. They argue that, through the ENGO, they can get closer to people because people trust more and get more involved if it is an activity developed by them and not by the local parish.

> "They [ENGO] have a different capacity to mobilise than we [local parish] do, and it's easier to support a cleaning activity proposed by them, instead of us being the ones

> organising it. Because if we invited the population for a clean up campaign, they would think that 'this is us doing their [the local parish] work'." (Interview 12)

On the other hand, at the local council sphere, there is a poor political awareness and interest on issues such as indicators and monitoring tools in general. Two foremost quotations express this conclusion, extending these critiques to all Portuguese local councils.

> "In order to do its job, the local council, which is the main interested part, should have developed a system like that, but this does not exist. And I think that they don't even realise how important it is." (Interview 11)

> "At the moment, building indicators scare a lot of people. There are too many sources and though the information is there, it's scattered and there's no will to have it all integrated in one single system. If I were to ask any local council about any data today, they would take 3 to 4 weeks to answer and no one would know where that information was to be found. By itself, an indicator set is contrary to what politicians want. Indicators are real, concrete and hardly allow for cover ups. The best thing isn't to have numbers. There's a lot of rivalry among local councils and if someone said that one of them recycled 70% of its waste and that its neighbouring local council recycled 80%, there would immediately be a total loss of credibility regarding the numbers and everybody would say that the numbers weren't correct and that the sources weren't trustworthy. This is why there's no interest in building indicator systems." (Interview 16)

One final reason for the poor capacity to keep the set alive is the perception by the ENGO that the indicators have a lower capacity to attract the media's attention and therefore also stakeholders' interest and resources.

> "Maybe doing a participatory public process attracts journals' front covers at the local, regional and even national level, and that attracts a lot of attention. It attracts human resources, in terms of people, and also financial resources, because companies like to support visible things, and everything is much easier, because it's much more visible. A monitoring system, as it's something done regularly, doesn't have that visibility and there isn't so much interest of the 'living forces' of the region and of the financial resources to build such a system, because it isn't so appealing to people's eyes. And it's maybe even more interesting than the rest." (Interview 11)

Governance changes and challenges

The experience of LA21 in Mindelo has undoubtedly caused an extraordinary impact on local governance structures around environmental issues. Macedo and Silva (2006) argue that the new habits of public debates and the civic involvement in decision-making programmes have shed a new light on local politics. It made it possible to weaken a certain feeling of indifference and absenteeism of local citizens in public life and to generate opportunities for several public and private local actors to come together to debate community problems.

The credibility and legitimacy of the process were reinforced because it was supported by a local environmental organisation with no political connections that would not obtain political benefits from

it. Even when sometimes politicians consider that these organisations are 'fundamentalists', only worried with pure environmental preservation and that systematically tend to block decision-making, this was not the case in Mindelo. Moreover, the involvement of all local political parties in the LA21 process gave a positive image to both local citizens - that perceived this as the joining of different ideologies and efforts towards a common goal - and local politicians - that realised the weight of the civic movement and have decided to join it. Trust was therefore a decisive element that strengthened the process.

Nevertheless, the process made clear some general discomfort of the population towards local politicians at the same time that there was also a certain disbelieve of local political parties regarding the introduction of participatory mechanisms. Because those mechanisms were introduced for the first time, there was the feeling that sometimes those debates were an extension of the conventional political debates within the local government structures.

> "Even in the public forums, although they listened more to the citizens, there was some tendency for them [politicians] to monopolise the debates (…) and sometimes they were the only ones talking." (Interview 11)

An essential part in the whole process was the involvement of the University of Aveiro, and later the Catholic University of Oporto, to provide scientific credibility. Expertise knowledge was of the utmost importance to justify a profound diagnosis of the village, to provide the most adequate methodologies to develop the entire LA21 process and to increase legitimacy. They played the most significant role in the process of developing the indicators, but their strong position has limited the set to a mere technical task, neglecting the involvement of other actors in their selection and not opening discussions about their operationalization.

Several partnerships were established among local authorities, local cultural and recreational associations, local companies and other organisations to design and implement the action plan. This has enabled the juxtaposition of efforts and resources, particularly to put into practice several activities of the plan. Nevertheless, this juxtaposition was not as successful in the consolidation of the indicator set and no efforts were directed to operationalize the indicators. It seems that indicators needed to be there as a part of the action plan to provide more credibility and ensure legitimacy, but in the end no one felt committed to it or accountable for it.

It is also important to emphasize the political commitment of the local parish to the project and its close relationship with the ENGO that generated conditions for a strong learning period. This learning outcome is well expressed in all interviews and documents reviewed. Although at the level of the city council the attitude towards the process was different, as it was already stressed, it seems that it has benefited from this learning process as well. They were not interested in playing a 'more responsible' role besides that of receiving and supporting the initiative, but environmental awareness became reinforced and also led to the support of other sub-local LA21 experiences in the municipality[3]. Even so, several critiques were addressed to the local council real commitment and were used by interviewees to map the current panorama of local government in Portugal.

[3] Three other LA21 at the parish level have started since 2007 in Vila do Conde municipality, together with other 15 local parishes in Great Oporto. This pilot initiative was supported by the intermunicipal company of waste management of Great Oporto and was inspired by Mindelo's success. For further information see http://www.agenda21grandeporto.com/

> "The internal way of working [of local councils] is very 'cloudy', there's no interaction among departments and what's more, the malfunctioning of the departments themselves. (…) They have long standing Mayors, an unwieldy structure, they aren't dynamic, and not worried about finding indicators. The licensing, for instance, is also an indicator of the [Mindelo's] set. But local councils don't want to disclose this information. If we [the ENGO] asked the Local Council of Vila do Conde about the percentage of licensing that constitutes environmental criteria, they would never give it to us." (Interview 11)

Follow-up problems in monitoring stages are not specific characteristics of this project but reveal to be major weaknesses regarding the real implementation of LA21 plans and not only specifically in Portugal (see Fidélis and Moreno Pires 2009) as argued in Chapter 4. Sustainability indicators are a reflex of these problems. The energy of the process is almost entirely concentrated in the participatory definition of a vision and a strategic plan. Usually there is no energy left for follow-up actions, namely for the institutionalisation of monitoring indicator systems, and this situation is reinforced by the political disinterest in them.

> "We have to be realistic. It's very difficult to collect them, and some indicators aren't dependent on the implementation of LA21 actions but on several other things and influences (even on the actions of neighbouring municipalities, such as for instance in the case of the quality of sea water). Monitoring systems always reveal a lot of weaknesses, besides showing negative assessments that politicians do not want." (Interview 15)

Finally, the existence of similar projects of LA21 in the region, instead of contributing to the consolidation of capacities, efforts and resources for monitoring tasks, is revealing to be a lost opportunity either to build a coherent and articulated regional strategy or a comprehensive assessment strategy.

> "A lot of things are being done, a lot of LA21 action plans have come up, a lot of Strategic plans, mainly due to European funding through QREN, but besides being very recent, the main difficulty lies in following-up those planning processes." (Interview 15)
> "If there isn't an alignment of several decision-making levels, of levels of maturity and openness on the part of politicians, it's very difficult to be able to transform these projects into effective projects that can function as guides for the region's development. (…) Considering that we are only one region such as Great Oporto, we have a lot of projects going on: LA21 of Mindelo, LA21 pilot project in 18 local parishes, LA21 of Eixo-Atlântico and the Sustainable Future project, that end up not being articulated and not combining any common efforts." (Interview 16)

Different uses of the set

In the first place, information for the indicators was not collected and they were not updated since their technical design. Indicators were not used to provide conceptual or institutional changes during their definition process, as they were only chosen by the team of experts and as there was the perception that the whole LA21 process had already fulfilled this conceptual task of understanding multiple perspectives of sustainable development for Mindelo. They were also not

followed or disclosed after their establishment, to have the capacity to influence citizens and local decision-makers.

The 2007 progress report represented the only attempt to measure tangible outcomes of the LA21, although without any effort to use the indicators of the set for this reflection.

> "It was a strongly empirical assessment. I think that operationalising the indicator system was never discussed, but maybe that was also our [ENGO] mistake."
> (Interview 11)

Nevertheless, indicators seem to remain relevant for the environmental organisation that intends to collect them at least by 2010 and to create possibilities to ease communication mechanisms for their dissemination.

> "We aren't thinking of changing those indicators but maybe extending them for a longer period, and changing the way to disclose them (…) If there was an online system, at least monthly, like for instance, for the water quality of small rivers, we would not only strategically see trends but would have the chance to act faster." (Interview 11)

6.4. The Case of Aveiro - Local Environment Plan and Sustainability Indicators

The driving-force project and administrative context

In Portugal, local experiences dedicated to environmental management and planning like the preparation of Local Environment Plans (LEP) have been developed by less than 10 per cent of all Portuguese local authorities[4]. The Local Plan for Environment and Sustainable Development of Aveiro (subsequently named as strategic plan) represents one of the first attempts carried out in Portugal by a local council to congregate efforts and actors towards environmental planning. The need to diagnose and evaluate local environmental pressures and to embrace a local participatory planning approach was considered to be innovative at the time (1997). The final strategic document was published by the local council in 2006 (see CMA 2006), although it was a result of more than nine years of several steps back and forward.

The decision to start a Local Environmental Plan was taken in 1997 when the Socialist Party came to power for the first time in Aveiro, since democracy was restored in 1974. During their mandate periods from 1997 to 2001 and from 2001 to 2005, the project went from an enthusiastic launch to a phase of disregard and a late approval. The initial aim of this project was to instigate a participatory plan, taking into consideration the environmental characteristics and particular challenges of the city of Aveiro. The local council then decided to converge the synergies of the University of Aveiro to the plan preparation and established a partnership with the IDAD (*Instituto do Ambiente e Desenvolvimento* – Environment and Development Institute), which is part of the University.

An insightful environmental diagnosis and a less developed social characterisation[5] of the city were coordinated mainly by the IDAD. In this preliminary stage, the IDAD has consulted some stakeholders with relevant environmental knowledge, such as the environment division[6] of the local council, local parishes, associations of private companies and environmental experts. A questionnaire was also directed to the citizens of Aveiro to evaluate their perceptions in what concerns environmental, social and economic needs of the city. The final diagnosis has adopted the Pressure-State-Response model to describe major areas that were defined, covering mainly environmental aspects (air, water, territorial planning, waste, biodiversity, noise, energy and transports), but also some social issues (like population, education, social associations, crime, social infrastructures, culture, etc.). More than 50 indicators were used. Following this extensive and technical previous analysis, a workshop of invited stakeholders took place in 2001 with representatives from local political parties, environmental and planning experts, private companies and a few citizens. The intention was to provide a basis for a debate about the needed actions for the city, although this initiative was restricted to invited guests and to only one workshop.

[4] In addition, these few experiences have not been considered that successful as they are criticised by lacking integrative and participative approaches and they are not, in general, taken seriously by local authorities, as a virtuous and integrative planning approach to environment. See Fidélis and Moreno Pires (2009) for further insights.
[5] As the main focus was to develop an Environmental Plan, at the same time that a profound social diagnosis was been done by another department at the local council.
[6] The environment division is part of the Development and Planning Department.

The action plan and monitoring programme was then prepared by the IDAD and proposed to the socialist executive in 2002. Although it wished for consensus and major discussions in the city and between different actors, this proposal was mainly developed by external experts, with few inputs from the very local council or from other stakeholders. It was not developed in coordination with the environment division, but as an external consultancy project. The proposed actions focused solely on environmental issues divided into four main themes (energy, mobility, natural spaces, and environmental awareness and information), following the initial aim to develop mostly an Environmental Plan. As such, the previous effort of the diagnosis to include some social issues was dismissed and there was no interest in incorporating a more comprehensive view of sustainable development for the city (as stated in the title of the plan).

It took almost a year until the political executive body decided to submit this plan to a period of public consultation of two months. Contributes from some local environmental NGOs and experts were received and also from different departments of the local council that were not involved in the process before (like the division of social action, education, youth, sports, and patrimony). The main changes introduced by the new contributions were: the reincorporation of a social dimension through the inclusion of several actions and indicators under the title 'society' and the acknowledgement of specific legal environmental requirements as well as a stronger assimilation of national and European strategic guidelines. The effort to widen its initial scope must be recognised, although the economic and institutional dimensions were neglected. The concept of sustainable development seems to be used in a rhetorical way, adding to the environmental strategy some actions which were already planned and prepared separately by other divisions in the local council[7].

For some reason, and after a very active phase and a strong initial political interest and commitment to the project – that also led to the signature of the Aalborg Charter –, it took two more years for the final plan to be approved, which happened in May 2005 at the end of the socialist political mandate. The executive body approved the strategic plan and the related Sustainable Development Indicator Set (subsequently named as the 2005 indicator set), as well as a proposal to create two consultative bodies: a consultative body on environment and sustainable development to improve local decision-making on those matters - the Environment and Sustainable Development Consultative Council (*Conselho Consultivo para o Ambiente e Desenvolvimento Sustentável*); and, a Forum for Aveiro Sustainable Development with the aim of promoting an Agenda 21 strategy, composed by several different local stakeholders. Although with some ups and downs and a long way to develop and approve this strategy (almost 8 years), political commitment to the environment was quite strong and the efforts to improve local decision-making towards sustainable development was made visible in this executive approval, where indicators played a central role.

Nevertheless, some months later, the Socialist Party lost the elections and the Social Democratic Party came to power in October 2005 for the first time, since the right-wing party in power from 1976 to 1997 in Aveiro was the Popular Party. Interestingly, the new executive body decided to continue the preceding political venture and only decided to revise the calendar and the budget of

[7] The inclusion in the strategic plan of the concept of Agenda 21 can also be criticised as purely rhetorical, as it is briefly mentioned as a next step to be taken in the local council towards sustainability. This very succinct reference seems more like a need to be there and to be publicly declared, than something already 'in mind' for the executive body. This becomes even more evident when, by the end of the mandate (2009), there were no actions taken to start such a process.

the strategic plan. The revised strategy was published one year after the beginning of the mandate, maintaining its structure, actions and indicator set.

Simultaneously, one of the first political decisions of the new executive body was the creation of the Environment and Sustainable Development Consultative Council[8] with the main purpose to generate a platform of stakeholders to present the strategic plan and debate the proposed actions. Nevertheless, in terms of distribution of power, this council is a mere consultative body that so far has come together only once, and where no clear responsibilities were defined and no actions were taken.

The intention to continue this sustainability agenda was not accompanied by parallel changes in administrative terms and the sector that was responsible for the plan remained in the environment division (as it was already planned in the previous strategy proposed by the IDAD). Its major task is to coordinate the entire plan and the actors involved for each action, and is accountable, among other functions[9], for the promotion of mechanisms to provide information to the public. Moreover, this division is also responsible for the monitoring programme and namely to "assess the indicators' trends; to ensure that actions are adapted to time and scale, to disseminate information and to check public acceptance of the actions and their results; and, finally, to present reports on progress" (CMA 2006, p. 22). Even so, after more than three years of the strategic plan approval and of the implementation of some of the actions, public officers from the environment division agreed that the division had no capacity to monitor the broader plan or to carry out any follow-up on indicators.

The main features of the indicator system

The main goal of the indicator set established in the strategic plan is reflected in the need to build a coherent basis to evaluate the plan's performance and the results of its implementation:

> *The Sustainable development Indicator Set should be approved to support the implementation of goals and principles of sustainable development, as well as to evaluate and monitor the Action Plan (*Minute *nº 22 of the executive meeting of 30th of May 2005).*

Indicators are also supposed to help to define and monitor clear targets or tendencies to be accomplished by each action. The evaluation of internal performance (of the plan and of the local council itself) as well as the assessment of the city environmental and social conditions are thus two concrete and formally assumed roles for the set.

The strategic plan encloses six priority areas: energy, mobility, natural spaces, quality of environmental parameters, environmental awareness and information, and, society. The set has a total of 74 indicators, divided into 43 environmental indicators which cover the first five areas, and

[8] This council is composed of local representatives from the local council, from all local environmental non-governmental organisations, the University of Aveiro, the Health Centre, the Nature Conservation Institute, and different municipal companies in the area of water, waste, mobility and tourism.

[9] "Such as to establish partnerships between the local council and the different actors involved; identify available tools and support instruments; account for public and private costs and respective funding; establish mechanisms of interactive participation among different stakeholders from the same area; and, integrate future sectoral plans with the existing plans of the local council" (CMA 2006, p. 22).

31 social indicators for the social area (see Appendix VI). Moreover, 31 indicators are explicitly mentioned as similar to the indicators established by the 2000 National SDIS.

Since the set was established, no further monitoring has been carried out. Only some indicators have been collected for legal reasons and the set is lost within the environment division and the local council.

Table 6.4 – Outline of Aveiro Indicator System

Responsibility for Indicators	The Environment Division of Aveiro's Local Authority
Main Goals	To assess the performance of the plan and of the local authority actions and to evaluate the city environmental conditions. To help to define - and monitor - clear targets or tendencies for each action
Dimensions of SD/ Conceptual Model	Divided in main areas of environmental and social issues: energy, mobility, natural spaces, quality of environmental parameters, environmental awareness and information, and society (divided in social action; education; sports; social housing and youth). The initial PSR model was abandoned
Nº of Indicators	74 indicators (41 quantitative and 2 qualitative environmental indicators; 29 quantitative and 2 qualitative social indicators)
Headline Ind.	No
Fact Sheet Items	No fact sheet for indicators or further description
Criteria	They are not defined in the strategic plan. Criteria referred to in the interviews were: to be quantifiable and related to the proposed actions, as well as to be linked with national sustainable development indicators.
Target Group	The intention of the strategic plan is clearly directed to citizens and other city stakeholders, but target groups for the indicators are not explicitly defined and even if assuming that they would also be citizens or the Local Environmental Council, both politicians and officers consider (in a clear contradiction) that for now the indicators should be mainly for internal management.
Communication Strategy	There is a clear and precise timetable defined for indicators' collection and report from 2006 to 2010 in the strategic plan that was never accomplished. The communication strategy is not explicit: although there is a short reference to the need for the dissemination of 'information', the way it should be carried ou is not clear, nor if they are for external or only for internal management purposes.

The process of developing the indicator system and the actors involved

The initial proposal of 2002 for the monitoring plan and its indicators was mainly defined by external environmental experts from the IDAD. The set was divided in a group of 20 performance indicators and 14 monitoring indicators, distributed by 4 environmental areas (energy, mobility, natural spaces, environmental awareness and information). Performance indicators aimed to evaluate the performance of the action plan on the whole, and particularly, the implementation and results of each action, while monitoring indicators meant assessing the environmental consequences of the plan for the city. For each indicator, targets were defined, either by specific measures for some indicators or by defining a general tendency to achieve (to increase or decrease).

The indicator set approved in 2005 is a result of the revision process that considered as a starting point the 2002 monitoring plan and indicators. Nevertheless, the environmental indicators were

expanded in number and scope and a new group of social indicators was incorporated, reflecting the decision to integrate the 'society' area in the action plan. Besides the difference in number and scope of the indicator set, some other main distinctions should be noted: the 2005 indicator set abandoned the typology of performance and monitoring indicators, as well as the PSR model; it incorporated a model of analysis and comparison of national indicators defined in the 2000 NSDIS; and, finally, omitted the definition of targets and tendencies that should be accomplished by each indicator, which was previously included.

Several public officers from different divisions of the local council were involved in the definition of the 'new' indicator set. This internal discussion process tried to incorporate and integrate different indicators that were considered important for other sectoral strategic plans, such as the Social Network (incorporating a social diagnosis and social development plan), or the Youth or Sports Plan, for instance. There was some debate between divisions about monitoring actions and indicators and also an attempt to integrate their sectoral work, before the plan was approved, but this initiative seemed to fail to continue thereafter.

> "With the new executive body, the divisions aren't as close any more. The political responsibilities, and the way things are done aren't as shared. The previous transversal nature of the work is now lost." (Interview 2)

The effort to harmonise the indicator set with the national indicator system, as well as the intention to create a more transversal set for the local council, are considered to have developed a very ambitious project:

> "It was a very complete, very ambitious set and it is very difficult to have access to data, and therefore difficult to follow, because there are a lot of supra-municipal, regional and even national indicators (…) it's very broad in scope and it becomes too complicated…maybe it's a very emotional set." (Interview 2)

The participation of other external actors or citizens was not considered crucial for the definition of the indicators, not even public or private entities that could produce or have access to crucial data. This was followed by an isolated use of some indicators for specific reasons within the environment division. The set has not been monitored, neither have indicators been collected, apart from a few particular indicators like air quality or noise (that are also required for legal obligations). Although the environment division was officially appointed responsible for the set, its public officers do not feel committed to it and no one assign high importance or priority to the indicators. For instance, some students tried to operationalize the set in 2006, through an academic internship at the local council, but their efforts were in vain because they were not used. They were totally dismissed by environmental public officers, as they have recognised in the interviews. Those efforts resulted in a report that lies literally forgotten on the shelves and was only useful to evaluate the difficulty of collecting data for several environmental indicators and their technical problems. The lack of data should not therefore explain the poor interest or little importance assigned to the need to have updated indicators for informed decision-making.

The importance of the set for local governance and its different uses

Importance of the set in the context of local sustainable development

Political commitment to the strategic plan seems to be but a reflex of the work taken forth by another executive (the Socialist executive), with no real engagement towards its actions and mostly towards the indicators or the monitoring programme. When the politician responsible for the strategy made a mid-term balance of the action plan (in 2008, at one of the local council's executive formal meetings), he only mentioned some environmental projects that were being implemented and omitted all the actions carried out in the social area. Besides, when analysing all the summaries of the executive meetings since 2005, there are only four references to the strategic plan, most of them referring to it as an environmental 'programme'. Furthermore, the indicator set or the monitoring programme were not mentioned to have been used to support decision-making.

Politicians feel that environmental education and awareness is a central issue of sustainable development, as the sentence bellow illustrates:

> "I would say that the best solution for almost all environmental problems isn't really spending 3 million Euros in a project… but a question of investing in education… it's a question of values and citizenship, and this, for us, is the central issue of any plan." (Interview 3)

According to this position, indicators could play a crucial role in education, where an obvious target group for the set would be the citizens. In fact, for one indicator of air quality, certain efforts were in place in order to have daily information published in local newspapers in a way that citizens could easily understand. This effort involved three different institutions and the environment division. And the local environmental councillor was personally involved in this initiative.

> "The target group is the population in general. It only makes sense this way, and this is why we have chosen the three stoplight colours to present air quality data in the local newspaper." (Interview 3)

Nevertheless, in general, the indicator set is perceived as a technical tool useful for public officers, and surprisingly in a somehow contradictory way, they are considered to have a weak role in public education, as they only have 'a technical substrate' (Interview 3). Monitoring is essentially considered to be a procedural task that helps to confer scientific credibility to a political decision. Moreover, it is clearly stated that a political decision comes first and only then scientific validity. It is also stated that data is not needed to make a decision.

> "This monitoring action is, indeed, a technical circumstance. It's a technical component. Its political nature comes first, when it assumes a particular document, then, it develops into a scientific nature to provide scientific credibility, and, then, they [the indicators] should be considered as data, not to make a decision…but, in fact, with scientific basis." (Interview 3)

When asked about which choice would be the most important in the future, between directing financial and human resources to operationalise the indicator set or, instead, to implement a certain action, the political position was again clear and the interviewee showed no hesitation:

> "Clearly the way forth is action. If an action is not concluded, there is nothing to be monitored. Without any doubt, the way forward is the implementation of actions." (Interview 3)

Without political commitment, vision and support, it is difficult to generate the necessary efforts, resources and institutional capacities to have indicators updated. There is a visible contrast between the importance and degree of engagement, attributed to the design and dissemination of one of the indicators (air quality) and the rest of the set. Furthermore, the decision to exclude from the strategic plan concrete targets and trends for the indicators (included in the previous version) further illustrates the poor political commitment to the set as a whole and the little interest to enforce transparency for citizens and to raise public awareness.

Regarding environmental public officers, they follow mostly a technical discourse and do consider that indicators should be 'simple', 'objective', 'measurable', and 'adequate to the local scale and to specific actions':

> "Indicators must translate a measurable target to be achieved. Ideally, the indicator should always be quantifiable, without a subjective nature." (Interview 2)

For them, the most important obstacles to overcome are the 'availability of data', the 'possibility to have mechanisms to collect data', and most importantly the availability of financial, human and technical resources. They also recognise the need for technical support or guidelines from the national or regional levels. They feel that the pressure of legal documents regarding the competencies and activities of local authorities in general is colossal, when compared to the absence of similar technical and financial support.

> "In the end, if the local council was to fully abide by the law, it would be necessary to have most of those things [indicators]. But we are lacking the means. It's very easy to approve laws, but the problem is that the local council doesn't have the financial and human resources and, in some cases, there is a lack of technical knowledge." (Interview 2)

Interestingly, they also feel distrust about the indicators' transparency at the local level in general. They consider that they are only used to support political decisions that were already taken and, therefore, are mostly used to camouflage the real situation, instead of making it more clear and transparent.

> "From a political point of view, everything needs to be perfect all the time, and from a technical point of view there are huge obstacles. The logical thing to do won't be to give priority to an assessment indicator set." (Interview 2)

Governance changes and challenges

The implications of what has been said so far about the Aveiro's experience regarding the role of sustainability indicators in local governance are very challenging. The responsibility of experts was very strong in the first plan, but lacked equal involvement from the local council. The delivery of a

final action and monitoring plan by an external entity without mechanisms that could grant the local council the capacity to internalise the process was clearly prejudicial. There was not a positive and mutually reinforcing relationship between experts from the University and the local council. And this may be a critical challenge to overcome regarding the interaction between researchers and the local council.

Afterwards, the revision process, that led to the final indicator set, did not involve external experts or other stakeholders. Public participation seems to be a big concern in the official document, but clear or concrete participation mechanisms were not established for the choice of the indicators, its discussion or collection. Legitimacy of the set seems to derive from the approval of a participatory strategy *per se* and from the involvement of public officers, who had the technical task of building a monitoring strategy. Efficiency, instead of democracy, is clearly the leading motto for the indicator's function in Aveiro local municipality. For instance, the Environment and Sustainable Development Consultative Council could have played a stronger role in defining or implementing the indicators, but the technical discourse around the set and the poor political commitment to it crippled this promising role.

An interesting governance change did occur when the work within and between departments to define the 2005 set was carried out. Although late, it allowed an interesting transversal debate about strategies, goals and indicators to monitor in each sector. However, as no further procedures or actions were in place to provide some continuity to this work, it disappeared as soon as the set was established. The current lack of knowledge about the course of 'the other social' actions or even the absence of transversal working routines within departments at the local council is so notorious that the environment division was not aware that the city of Aveiro is part of the Urban Audit project. In this project, data is collected from the local council to report to the European Commission but the environment division was unaware of this, because this task is usually carried out by another department. According to one public officer, "the administrative and organisational division of the municipality auto-blocks itself" (Interview 2).

Different uses of the set

Clearly, few uses can be attached to this set in a conceptual, concrete or even symbolic way. Conceptually, during the final definition phase it did provide room for transversal work and discussion amongst departments. The indicators were built from actions which were defined in a participative way, from actions developed in some other sectoral programmes, from the previous external expert-based work on the indicators and from the national SDIS. This was the major learning phase of the indicators process. Nevertheless, the concept of sustainable development used to build the set was biased since the beginning and it did not allow the involvement of all departments of the local council or other external actors (besides experts). Furthermore, it seems that the indicator set was part of an elegant strategy developed by a previous political party, with no serious intentions of being implemented by the current party in power or being used to communicate with society.

The communication strategy for the set was not discussed at the local council and although there was one department in particular responsible for it (the Environment Department) and there was a calendar (published in the strategic plan) with concrete dates for the collection and dissemination of the indicators, it was not accomplished. The environment public officers produce internal reports

with the single purpose of providing feedback to the politicians on the implementation stage of environmental actions and programmes. This could be argued to be in synchrony with the dominant discourse of indicators as technical tools. However, in those internal reports, indicators are not assessed and data is not collected. So, the indicators have not been useful so far in Aveiro, neither for internal managerial nor for technical purposes. Furthermore, those reports only reflect the environmental area since the department is not following any progresses made on other areas.

6.5. The Case of Oeiras – The National ECOXXI Project Through a Local Perspective

The driving-force project and administrative context

The Oeiras municipality is well-known for its engagement in one of the first Local Agenda 21 processes in Portugal in 1999. A two-year period of relatively broad participatory discussion has culminated in a strategic LA21 action plan, published in 2001. Several actions and changes did spring in the municipality from this learning process. However, as no monitoring strategy took place, or an indicator set was built to assess the plan progress for 3 years, the local council decided to give the LA21 a new dynamic in 2004. Supporting the decision to revise the process was the intention to start a new participatory phase that would establish fresh sustainable development recommendations and goals, and that could also support the revision of the local territorial master plan. Four other goals have inspired this decision: to make a balance of the implementation of the 2001 plan; to redefine and update the action proposals; to support the plan with a new strategic management and implementation tool; and, finally, to build an assessment tool for evaluating the plan's effectiveness, through an updatable and practical indicator system: the *Sustainable Development Indicator System of Oeiras – SDISO*[10]*.* After two years (2006-2008) of internal debates, participative workshops and discussions, the 2008-2013 action plan was drawn. It actually included a proposal of indicators to monitor the strategy as an initial impetus for the creation of the SDISO.

The new strategic plan, approved in 2008, adopted a very innovative next step to strengthen the local council's institutional capacity to deliver the plan. The LA21 coordination group, with the scientific support of the New University of Lisbon, prepared a one year postgraduate course to be administered at the local council under the University's responsibility. The aim was to provide theoretical and practical knowledge to local public officers, with a postgraduate degree 'built' in accordance with the local circumstances and training needs, bearing in mind the plan's implementation and effectiveness. More than 20 public officers from almost every department and service were selected through an internal procedure, and had – as one of its key tasks - the opportunity to develop and operationalise the indicator set proposal. From the point of view of this research, the experience of Oeiras has been particularly motivating and appealing to follow, although for obvious reasons related to its embryonic stages, it could not be further investigated here. Nevertheless, the participation in the ECOXXI indicator programme since 2004 in Oeiras is considered to have given the local council a good know-how about applying sustainability indicators at the local level. Furthermore, the experience with ECOXXI is considered to be a crucial step towards the development and consolidation of the broader SDISO.

Oeiras local council's decision to apply for the ECOXXI programme, which was already explained in detail in Chapter 4, was triggered by an invitation from ABAE[11] in 2004. At the time, it was thought to be an appealing and significant experience to be involved in, since the project was in an embryonic phase. The Environment Department recognised the importance of learning from the project and Oeiras decided to apply to the programme.

[10] Oeiras Local Council website: accessed in 2008.
[11] Every year, ABAE sends an invitation to all of the 308 local authorities in Portugal to participate in the programme.

The main features of the indicator system

Table 6.5 – Outline of Oeiras Indicator System

Responsibility for Indicators	Environment Department of Oeiras' Local Council
Main Goals	To participate and to be part of a national programme for local authorities concerning the development of sustainable development indicators. To evaluate local SD policies and consolidate an information system for planning and decision-making.
Dimensions of SD/ Conceptual Model	Broad scope, involving several environmental and institutional issues and also to a lesser extent social and economic issues. The themes are: environmental and sustainable development education; civil society; institutions; nature conservation; air; water; energy; waste; mobility; noise; agriculture; tourism; and, land-use planning. Use of the PSR model.
Nº of Indicators	23 indicators defined by ABAE
Headline Ind.	One index
Fact Sheet Items	Code; theme/area of SD; name of the indicator; relationship with the conceptual model; brief description; relationship with the concept of SD; targets to achieve; unit(s) of measurement; methodology; data source(s); punctuation system; and, additional notes.
Criteria	Defined by ABAE: objectivity, feasibility and reliability of the indicator; accessibility of data; possibility of aggregation; possibility to compare with legal requirements or other targets/trends at the national and European level; facility to calculate and interpret; scientific validity; implementation costs; and possibility to update the indicator in an easy way.
Target Group	ABAE, citizens in general and the local authority (officers and politicians)
Communication Strategy	ABAE national publication and dissemination of the final index; dissemination on the local media and within departments by the local authority.

The ECOXXI index translates one percentage that combines 23 indicators and their accomplishment of defined targets or trends. Indicators are considered according to the PSR model, and a major preference is given to the *Response* policies of local authorities (there are 2 Pressure indicators, 6 State indicators, and 15 Response indicators) (see Appendix VII). Indicators are also categorised according to the capability to achieve certain goals (divided into 4 compulsory indicators – primary indicators –, and 19 non-compulsory indicators – optional indicators), and to the capacity of accomplishing those goals (divided into 18 universal indicators – that can be applied to every local council –, and 5 non-universal indicators – for local authorities that may not have the capacity to accomplish them – such as targets for coastal areas, in the case of one municipality located in the countryside). They cover socio-cultural, economic-institutional and environmental areas, but with a clear emphasis on the environmental and institutional issues, mainly disregarding the social and economic aspects. Some indicators are easily accomplished, since they relate to the fulfilment of basic needs, while others are more difficult to collect and demonstrate (such as indicators 6, 8, 9, 10, 13, 13, 21 and 23).

The process of developing the indicator system and the actors involved

As the process of developing the indicator set is external to the local council (and was described in Chapter 4), this section aims to focus on the process of applying the set internally, trying to explain

the role of the different actors involved. The Environment Department has a prominent role in the whole process, since it is the department responsible for the collection of the information and the elaboration of the final report to submit to ABAE. Every year, it submits to political consideration the decision to be involved, or not, in the programme. Political positions have been supporting the participation of Oeiras but with no further roles or actions besides this (positive) agreement.

Every year, the process starts with a national learning session for local authorities, where discussions and debates about concrete indicators take place (June/July). Two Oeiras environmental public officers take part in this annual session that enables them to clarify major doubts regarding data collection procedures and also actions that may enable them to strengthen their position in a concrete indicator. Those public officers have the operational responsibility for the programme and one of them is the coordinator.

The collection of data for the index is the most challenging and time-consuming phase and usually it extends from June to October every year. Major obstacles emerge in this phase and are predominantly associated with the non-response and non-interest of most departments that do not submit data on time, as well as with the need to collect data from external entities. In addition, in such a large municipality with more than 1850 employees, there are always restructuring procedures taking place, as well as changes on the personnel responsible for department information. These permanent administrative adjustments block the swiftness of the process:

> "Sometimes, it's very difficult to obtain some answers, as public officers change and we don't know whom we should ask for data and who is responsible for what … data is very dispersed." (Interview 24)

After collecting and inserting the required data in a specific digital database created by ABAE, a final report is prepared, comprehending not only the data necessary for each indicator, but also several other documents, links to websites, pictures or other texts that can help to detail all local actions towards the achievement of every indicator. This effort to support quantitative data with other information and material aims to transform "rigid numbers" into qualitative information to help the jury in their evaluation. The final report is then submitted to political consideration as a procedure, before sending it to ABAE. Afterwards, ABAE evaluates all local applications (from December to March) and it provides a period for discussion with the municipalities about the results and only then is the index published for the general public (usually in March/April). The programme starts all over again with a revision of the indicators by the National Commission (aiming to correct major problems or difficulties and always trying not to change radically each indicator for comparative reasons) in May, before the annual invitation for the municipalities to participate.

The ECOXXI index result is disclosed through the national media and it consists of a list of all the municipalities involved and their final position in the ranking. At the local level, Oeiras local council publishes small news in the local media about the overall position of Oeiras and the areas or themes that have received better score. Internally, the Environment Department provides similar information to all the departments involved.

> "There is no great disclosure at a specific level, it's only the final value. We [the Environment Department] stress that we obtained more points in this or that area, but we don't give more information than that. Internally, we do the same thing. We say that

> we have applied and that have obtained a major value on the indicator a, b, or c." (Interview 24)

Some critiques can be made to this way of communicating and disclosing the index, namely because it prevents a better understanding of the local council's performance on the 23 indicators, their progress across time and space, or even an assessment of the worst areas for the municipality. It ends up to be nationally considered as a ranking of municipalities with few explanations for their final positions. The indicators' potential to raise awareness within and outside the local council is therefore restrained by this narrowed communication procedure.

> "I think that the image given is a little bit like a ranking, the tendency is to do comparisons and that wasn't the goal of ABAE." (Interview 24)

In conclusion, Oeiras has decided to participate in the project since its beginning, but in 2008, after 3 years of application, it opted for setting the project aside, as it will be explained further on.

The importance of the set for local governance and its different uses

Importance of the set in the context of local sustainable development

It must be explicitly explained that the various attempts to obtain some political feedback about the importance of the ECOXXI project for the municipality have failed. Even after agreeing upon giving an interview, when faced with the questions, the Vice-Mayor refused to answer them, gently asking to postpone the answers to a later written letter, which we did not receive. Bearing this in mind, political opinions can only be indirectly inferred from all the other pieces of information collected.

From the perspective of the environment public officers, applying to the ECOXXI indicators of Oeiras during those 3 consecutive years has enabled them to organise and systematise information in an integrated way. They recognised this tool as an important transversal platform for them, a way to connect activities and actions with other departments and, above all, a tool that offers them the capacity to have access to information of several different projects that are happening in the municipality.

> "For us, technical staff, it's an exercise that allows us to have a global vision (…), a comprehensive vision of the local council's projects and who's in charge of developing them." (Interview 24)

This key benefit, together with the provision of sound procedures to collect and organise internal information in a systematic way, rendered those indicators to be considered as efficient tools to be applied locally. ECOXXI indicators incorporate theoretical work of specialised entities in the search for better methodologies to be applied locally, and provide major discussions with local authorities about the advantages and disadvantages of applying them on the terrain. In this sense, public officers consider that the ECOXXI experience does provide recommendations and technical guidelines that local authorities need and are eager to have, in the absence of other national guidelines regarding the development of local sustainability indicators. In addition, the training sessions provide them with opportunities to learn and exchange experiences with other municipalities regarding local policies and activities towards sustainability, which they rarely have.

Nevertheless, in Oeiras, public officers understand the indicators as a purely technical tool that only involves public officers, where the political support or involvement is restrained to a 'yes' or a 'no' to the project submission and where the capacity to raise environmental awareness of the public is very small. They also do not acknowledge benefits of an annual application, either because of the fee they have to pay and the time spent collecting indicators, or because of the few changes that each indicator suffers from year to year. This is why they think that it is more useful to apply to the project every 2 or 3 years and have therefore decided to postpone Oeiras' participation to 2010 and to concentrate on the SDISO consolidation.

> "In other years, we had demonstrated interest, because it was new to us and it was an interesting experience, but this year [2008], at a technical level, I'm not motivated [to apply]…I don't see here any benefit… in a year time or even two, depending on how it goes…! I'm now more focused on our own indicator system." (Interview 24)

Oeiras' participation reflects their recognition that the project had the capacity to strengthen procedures to collect information and to improve assessment and analysis of their own local policies to better plan future initiatives, as well as to consolidate methodologies for the development of their own sustainability indicator system. The efficiency discourse is translated in this recognition of indicators as tools for internal management. On the other hand, there is a small recognition that by applying to the ECOXXI – and considering the general good position of Oeiras in those 3 years -, the local council has the possibility to strengthen the environmental and sustainable development awareness of local citizens. This more democratic discourse on the use of the indicators is, nevertheless, postponed to the future role that the SDISO may play.

Governance changes and challenges

ECOXXI has actually changed several procedural and administrative actions that were bounded by departmental lines.

> "I remember when I realised that there were several projects in the social area that I had no idea of…we know that the social area does a lot of things, but by collecting the information I discovered a lot of projects and I also had the chance to get to know the people, my colleagues, involved." (Interview 24)

Public officers also highlight the fact that the same information, the same data, is collected several times, in different moments, by different people and with different purposes:

> "We are always producing the same type of indicators for multiple purposes (…) the piece of information that is collected because of ECOXXI is the same piece of information produced for other multiple purposes of reports and legal obligations that every department must have, and we haven't been able to congregate it in a single platform." (Interview 23)

Behind those arguments is the shared belief among the interviewed public officers that, generally, evaluation procedures are, unfortunately, only now becoming part of the local culture. This current pressure on assessments and indicators is a result of the late maturity phase of urban planning and decision-making at the Portuguese local level. They recognise their own recent consciousness to

better manage local projects. They also recognise the stronger political awareness to involve more and more the technical staff in managerial aspects (like, budget, definition of objectives and priorities as also of targets and indicators to assess progress). This justifies the recent need for indicators and the still disorganised way to collect and analyse them in Portugal, at the local level.

ECOXXI indicators had an important internal role for Oeiras' local council and contributed to the development of a local sustainability indicator project. Nevertheless, an acknowledged challenge still remains: the need to consider local citizens as key target groups, to whom the provision of indicators through a stronger communication strategy could help to strengthen sustainability education strategies and improve the transparency of local policies. Citizens are not aware of the targets established for each indicator and they have not had the chance to evaluate the performance of the local council in different areas across time and space.

Different uses of the set

Indicators from ECOXXI have been used in Oeiras in quite interesting ways. First, the annual training sessions provided by ABAE functioned as debate platforms with an important education role for public officers, which had provided practical, concrete as well as conceptual changes in policies and evaluation strategies, mainly in the environment area. For example, environmental public officers have recognised that they have been implementing environmental education programmes in schools for more than 14 years in Oeiras and have not been able to properly assess them or to produce qualitative data, for instance to measure behaviour changes over time. They had been collecting only quantitative indicators –such as number of programmes, or number of participants – that tell little about the effectiveness of those programmes. This major deficit was attenuated by the provision of several methodologies to improve this qualitative analysis in one of those ECOXXI training sessions, and the public officers recognised this as a major benefit that improved the whole education programme.

Furthermore, in Oeiras, the project functioned as an internal audit to adjust and integrate thematic actions and, as it was already stressed, as a guide to help building the SDISO, in the absence of any other national or regional recommendations. Another consequence of the use of these indicators was that actions or activities that were not a priority for the local council started to be considered as such, after applying to the project (for instance, in nature conservation related policies). The resulting raise of awareness, even for public officers and technical staff that were supposed to know about some areas and legal requirements, is very interesting. It helped to promote new activities, to inter-relate them, and to allow for new questions concerning local sustainability to emerge.

The most negative aspect is the fact that most of those indicators and information remain in the Environment Department and are not shared with other departments. They are not even used for political decision-making. Applying to the programme can be a waste of time, energy and resources, if they end up not being used for political decision-making in the medium-term.

> "The negative part, not so negative in fact, is the waste of time, the associated logistic that isn't then used for decision-making." (Interview 24)

6.6. The Case of Oporto – European Impulse for Quality of Life Indicators

The driving-force project and administrative context

The Monitoring System on Urban Quality of Life of Oporto was developed not to monitor a particular strategy or to be a part or stage of a specific plan for the city, but as a project on its own, with a distinct identity. Just like the experience of Palmela, this indicator system was shaped with the main purpose of assessing and monitoring local sustainable development – in the case of Oporto, under the name of 'quality of life indicators'. Therefore, in opposition with the other case-studies, there is not an overall project behind the indicator system to consider. As such, this section analyses the main driving-forces and leitmotivs for such an initiative.

Oporto, Lisbon and Braga were the first Portuguese cities invited by Eurostat to the pilot project of Urban Audit – Assessing the Quality of Life of Europe's Cities – in 1998. From then on, the project has expanded to 6 more cities in Portugal (Aveiro, Coimbra, Faro, Funchal, Ponta Delgada and Setúbal). Being an effort to systematically collect, process and analyse statistical information, the Urban Audit represents an important incentive for local authorities to implement their own urban indicator systems.

The involvement of Oporto's local council with the Urban Audit experience inspired the adjustment of all its information structure and logic to the local needs and particularities of the city of Oporto and was decisive for the recognition of the need to set up a permanent information infrastructure to identify and monitor the city's rhythms and trends across time (see Santos *et al.* 2007 and Santos and Martins 2007). In a contrasting position was the participation of the other Portuguese cities in the project, which was not as enthusiastic. Working for the pilot phase in 1998 was a very exhaustive task, as it demanded an extensive search for hundreds of statistical variables (more than 400) that could be collected for an urban or suburban level. As most of data requested by the Urban Audit was not the most suitable for Oporto, the idea of building a specific set of quantitative indicators, as well as qualitative assessments, to improve understanding of the quality of life in the city gained impetus. At the same time, it was a lost momentum for the other cities that continued to see the initiative as a mere task of collecting urban statistics to respond to Eurostat (see the case of Aveiro). Oporto is now seen as an international example of good-practices regarding the development and monitoring of Quality of Life Indicators (see the European Urban Knowledge Network[12]) and was the Portuguese representative for the debate of future initiatives and improvements of Urban Audit in 2009.

The main features of the indicator system

The main goal of the *Monitoring System of Urban Quality of Life of Oporto* (MSUQLO) is to promote the systematic monitoring of a number of dynamics in areas that, directly or indirectly, influence the conditions of life in the city centre, for its inhabitants and visitors, in an effort to support the decision processes and creation of urban policies and intervention strategies (CMP 2003). The system has two components: 68 quantitative indicators and a qualitative evaluation through field surveys which target local residents in order to understand their perceptions on the

[12] http://www.eukn.org/

quality of life of the city (see Appendix VIII). Although only one survey was developed (in 2003), the project team is now considering other possibilities to apply this qualitative assessment in a systematic and easier approach.

Table 6.6 – Outline of Oporto Indicator System

Responsibility for Indicators	Studies and Planning Unit of Oporto's Local Council
Main Goals	To set up a permanent information infrastructure to identify and monitor evolutionary trends, to determine technical intervention strategies and to support decision-making, as well as to be a potential platform for the discussion of urban problems and the development of concerted strategies among different actors and the population.
Dimensions of SD/ Conceptual Model	Broad scope, involving four main areas: Environmental Conditions (Green spaces, climate, noise, air quality, bathing water quality, basic infrastructure); Collective material conditions (cultural facilities, sports facilities, educational facilities, social and health facilities, heritage, mobility, trade and services); Economic conditions (income and consumption, labour market, housing market, economic dynamism); and, Society (population, education, cultural dynamism, civic participation, health, safety, social problems)
Nº of Indicators	68 quantitative indicators (9 from environmental conditions, 22 from collective material conditions, 17 from economic conditions and 20 from society) and a qualitative assessment of the citizens' perception of quality of life in the city for one year (2003)
Headline Ind.	No
Fact Sheet Items	Major theme and sub-theme; name of the indicator; brief interpretation of the sub-theme; brief description of the indicator; brief interpretation of the indicator; urban audit comparative data; unit(s) of measurement; methodology; data source(s); and visual tools such as diagrams, tables, pictures or maps
Criteria	The choice of indicators was based on an examination of the available bibliography on quality of life indicators and of several experiences and projects in the world. Additional criteria were: relevancy and reliability, availability of data and guarantee of maximum comparability.
Target Group	Oporto local council, different local actors/institutions and citizens
Communication Strategy	Strong communication channels (reports, website, seminars and conferences) during the first years of the project (2002-2004) but lack of feedback mechanisms since 2005. The project is under revision and the enforcement of the communication strategy is one of the biggest aims.

The process of developing the indicator system and the actors involved

The project team responsible for the coordination of the indicator system was set up in 2001 and was composed of 4 public officers from the Studies and Planning Unit (SPU) of the local council, also with the direct involvement of the departmental director, in cooperation with one expert from a Research Centre of the Faculty of Economics of the University of Oporto[13]. The team spirit and partnership established between public officers and experts was central to the success of the project.

> "From the local council's perspective, I think that it was an extremely rewarding experience, in the sense that it became identified as a good practice that we want to repeat when we ask for external consultancy. We don't always have this chance, but we know that the local council benefits from having a multidisciplinary team, since the final product is more adjusted to its needs and because it better internalises the methodological gains." (Interview 27)

[13] Macroeconomic Forecasting Research Centre of the Faculty of Economics of the University of Oporto (CEMPRE).

The need to accomplish hundreds of statistics for Urban Audit in the pilot phase provided the project team with a fairly good perspective on the data that was available to set up the quantitative part of the indicator system and a first diagnosis of the city's quality of life. Simultaneously, an extensive bibliography review and analysis of other experiences around the world enabled the identification of a considerable amount of possible indicators, always looking for both adaptability to the local context and comparability with other cities.

After this review, the role of other services and departments within the local council was highly valorised. They were considered crucial sources of information as well as important partners in deciding about more suitable indicators. However, the project team realised that the collection and systematisation of sectoral information and the evaluation culture in general at the local administration was very weak at that time. This awareness and cultural deficit has limited the capacity of services to be involved in the choice and design of specific indicators. As a consequence, the project team ended up contributing for the collection of new sectoral data among departments, as they saw in the whole process an opportunity to boost the materialization of several subsystems for different areas. Nevertheless, the input given by different departments as systematic data providers continues to be important.

As a great deal of the responsibility for gathering data for the project was in the hands of external organisms – from the private sector to non-public organisations or even from the public domain –, a necessary step was the involvement of more than 25 different external entities - the so-called 'Institutional Network of Information Suppliers':

> "The creation of an efficient network of partnerships, allowing the acquisition of the necessary information at the appropriate time, was one of the central elements of the implemented system." (CMP 2003, p.15)

Similarly, the need for statistical information that was not initially collected or treated by those entities was the ground reason for the creation of several informal (and less formal) protocols. Those protocols enabled the organisation and registration of data in a systematic way. Through this process, within and outside the local council, it was possible to define, calculate and analyse the aforementioned quantitative indicators using about 190 different variables. This made the process very demanding, since it was required to organise different sources and pieces of information, from several timescales and geographical areas, involving very different methodologies. Therefore, a specific computer system was developed to improve the storage, management and consultation of the enormous volume of meta-information related to the variables of the system and also to facilitate the mechanical production of data and methodological reports (CMP 2003).

As such, the first quantitative assessment was completed in 2003 and was materialised on the first report of the Quality of Life for the city of Oporto (see CMP 2003). This report has also received further contributions from other technical experts from the University of Oporto. They were supposed to comment on the results, on the problems and prospects of the methodologies used and on the content of indicators. This sporadic collaboration was not extended to the second report which was published in 2004 (see CMP 2004). Nevertheless, both reports have, as well as the whole project, received the Mayor's attention, who contributed in person to some discussions on the results. Commitment has also been clearly demonstrated through the continuous financial support of the project and of the Unit that coordinates it.

It is important to highlight that the 2003 report also favoured another component of the project, namely a qualitative assessment of the quality of life for Oporto residents. Approximately 2,400 thirty minute long field interviews were carried out at the residents' homes. This exhaustive task enabled the assessment of a qualitative perspective, which allowed not only a comparison with the objective data already collected, but also, and even more importantly, to complement that analysis. Although the intention was to maintain this subjective component, only one survey was carried out. Currently, the project team is considering simplified approaches that should involve fewer resources, in terms of money, time and personnel, and should allow a more systematic assessment.

Since the publication of the second report in 2004, no other reports have been developed but the SPU has maintained its routines concerning data collection, keeping the system as updated as possible. It has contributed to respond to several requests for concrete indicators from politicians, public officers from other services and even external entities. A major revision of the process started in 2009 with the aims of redefining indicators, updating methodologies and the computer system, producing other reports and revising the communication channels to allow the system to be accessed as widely as possible both by citizens and local actors.

It has been a very challenging and demanding project, not only in terms of the quantity and diversity of data, and difficulty of the methodological aspects involved, but also in terms of the diversity of actors involved in the whole process. Nevertheless, it should be stressed that public participation was not an issue when deciding about what indicators to choose. Citizens were considered a crucial source of information, but with no role or responsibility in the indicators' choice.

The importance of the set for local governance and its different uses

Importance of the set in the context of local sustainable development

In the first place, the MSUQLO was a huge step towards the understanding of the operational concept of quality of life for Oporto and for the clarification of several domains so far not assessed or even discussed. The theoretical and practical redefinition and application of the concept of quality of life is an undeniable achievement of the project. The comprehensive search for the most adequate indicators, both quantitative and qualitative, to assess and reflect more carefully on the concept of quality of life itself turned the system into an essential tool to support technical and political decision-making. This is why public officers from the project team believe that indicators were urgent in the first place to promote reflection within the local council bodies:

> "I don't see those projects being a result of a direct relationship between knowledge and action. I think that there is here an intermediation between other projects, between reflections, an incorporation of other readings, etc. I think that they're fundamental tools mostly for raising awareness around a particular type of trajectories." (Interview 27)

The feeling of ownership of the project team was so strong that, with more or less external technical support, the SPU managed to establish the set internally, through daily routines and tasks. Since the core members of the team remained intact through time, it was easier to maintain

enthusiasm, involvement and dedication to the project. Curiously, and even without any formal relationship, the expert involved in the team also continues to play an important and critical role.

> "The source for most of the information isn't the National Statistics Institute with its own methodologies, but it's the information produced by the local council, and there's no possible readings of trends if we are not very careful. Because, otherwise, every indicator can report a different reality. And I'm not sure if people know the way we work. It's incredible, the number of pages that I have on methodological changes for some indicators." (Interview 27)

They also agree that the main target group continues to be the local council, just like as the primary role of the indicators continues to be the support of internal decisions. And this justifies maintaining the main criteria that were used to choose the indicators.

> "For instance, (…) the Energy Agency of Oporto is going to present a LA21 Sustainability Strategy and we, of course, acted as privileged intermediaries for that Agency, functioning as an internal link to get information from other services, even information that wasn't part of our system [MSUQLO]." (Interview 27)

Although realising the dissemination potential of this tool for the citizens, they are aware that producing reports is not the best way to reach people, to educate, raise awareness and change behaviours. But involving citizens in the current redefinition of indicators is, so far, a completely dispensable course of action.

> "I do think that the added value of citizens' involvement isn't at the level of the definition of indicators, but at the level of the definition of their anxieties, to understand what is going on in their daily lives." (Interview 27)

From the politicians point of view, and although it was impossible to directly get their opinion, major references are made mainly to the Mayor's commitment and support for the project, as well as to a general political interest in absorbing the information of the system for multiple purposes and activities.

> "From a political point of view, I think that the idea was very well supported, and there was a very interesting follow-up (…) and, actually, from the point of view of the Mayor, he was always in the front line." (Interview 28)

Governance changes and challenges

International influence had a decisive part in the process, firstly as the fundamental learning source that sustained the whole system. Secondly, international recognition of the project as a best practice concerning the development of an indicator system to monitor urban quality of life has enhanced the legitimacy of the set and also increased the reputation of the project for politicians. This contrasts severely with national or regional influences, given: (i) the aforementioned lack of national guidelines, coordination and support at this level; (ii) the lack of other local experiences in the country, but most importantly the poor interest of the other cities involved in the Urban Audit

project that generated a feeling of isolation for public officers of the Oporto local council and created but few chances for sharing experiences and learning with other practices; (iii) finally, the poor articulation of policies in an uninterrupted urban area within the metropolitan region. Because most indicators are influenced by the urban density of the Oporto's metropolitan area, where physical barriers of different cities do not exist, the efforts to expand and integrate the Oporto indicator system in the metropolitan area were totally inconsequent. Several political fragilities justify the insignificant role played by the Metropolitan Region, which is a crucial level of government and governance (see for instance Quental 2006). As an illustration, one may point out the non-consolidation of a regional indicator system.

One challenge to overcome is related to the fragility of the process to attach targets and clear goals to the indicators.

> "I believe that the big step forward that this project could have taken, and has not taken yet, concerns the concrete definition of goals through the value obtained for each indicator. This is where I think that the role of the system could be improved in order to make decisions and define goals. In this case, there was no such definition of targets." (Interview 28)

There seems to be a cultural change underway, regarding the desire for information, data, measurements within the local council activities and there seems to prevail a stronger awareness of the need for evaluation and monitoring activities, since the initial steps of the project (2001) until to nowadays.

> "Now, I feel more than ever that people want data, want to see numbers, and when we first started they didn't. Mostly, there's a stronger awareness of the need for systematisation. And this has completely changed since the time we first started." (Interview 27)

> "But I think that we're moving, little by little, towards the issues of evaluation and monitoring. Because for several years we were in the dark, there was no awareness whatsoever of these questions." (Interview 28)

Different uses of the set

Several outcomes and uses must be explored here, from developing the set, to its recognition and dissemination, as well as to updating measures. One of the major uses that the implementation of this monitoring set has had was the conceptual redefinition of the quality of life for the city of Oporto in operational and concrete terms. Several actors have helped to form the idea of what quality of life means for the city, the areas that were important and the ones that could be assessed, the major problems and the major benefits from several points of views, including the citizen's perceptions.

It also created an interesting link between different entities, as information suppliers, although their intervention could have benefited from broader debates, instead of just sectoral discussions. And this is also true for the citizens' involvement, who were asked to share their perceptions, but were not considered a crucial group in the debate about the indicators.

The experience received a very strong influence of several international experiences and achieved a great impact on several national and international events.

> "There was an enormous interest in our project at the international level, we did several presentations that got very good reviews. At the national level, we also did a lot of presentations, but more in academic events (masters' courses, etc.), but not to other local councils, no!" (Interview 27)

Many concrete uses in the local council were recognised, mainly because the set was internalised and is well incorporated in the SPU work and functions.

> "We use a lot of the information provided by the indicators in our work. Because this is transversal, right? And it's difficult to establish the frontiers of the project. It allows a critical exercise of our work, that is tested in several other initiatives and in other requests… it's like a '*tableau de bord*'!" (Interview 27)

Politicians do ask for information for decision-making as well as several public officers from other services within the local council. However, although trends have been followed, they remain very much inside the SPU work, invisible for the outside of the local council and remain without any clear targets.

Intentionally left to the end of this section, the following sentence captures the essence of the importance of the set for local sustainable development:

> "It's a valid, legitimate, appropriate and structured system and with results. With its ups and downs, but that keeps on going, and it's, even as we speak, undergoing a major revision activity again." (Interview 27)

6.7. The Case of Mora – Standardised Management Systems and the Challenge of Information

The driving-force project and administrative context

In the village of Mora, the initiative to implement an Integrated Management System (IMS) was promoted by the Mayor through several informal conversations about how the work in the municipality could be improved, and how to better serve the citizens' interests. The Mayor's sincere commitment to the enhancement of the local council performance led to a series of informal discussions about the role and importance of implementing a LA21 process in the municipality and about 'experimenting' the implementation of a Quality Management System, in a public organisation and, particularly, in a small local council. The latter option was not common in Portugal by that time (2003), but it was acknowledged that it would be an important project for the local council and a necessary step to start with. The former option was not abandoned, but postponed to a later stage, which in fact started at the end of 2008. Nevertheless, LA21 is generally seen as a project that is required by the certification process of the IMS and not as priority step for the small village (as we will see further on).

A private company was hired in 2004 to provide support for the implementation of such a system. After starting the work in the Mora local council, experts from that company challenged the Mayor to implement not only one international standard of quality, but three standards at the same time for all the Local council's departments. Because international standards are based on similar procedures and can be used in combination, the company argued for cost-effectiveness when applying those standards simultaneously in such a small organisation. The challenge was huge and the 'why not?' question gained terrain and transformed into something that could be possible in practice and that would be unique in the country. National and international recognition was seen as a possible merit of those voluntary efforts of improvement. With this impulse, the decision to start an Integrated Management System was made in that same year. Quality, the Environment, and Occupational Health and Safety are then the key elements of the IMS with the implementation of three international standards: ISO 9001 (Standardised Quality Management System), ISO 14001 (Standardised Environment Management System) and OHSAS 18001 (Standardised Occupational Health and Safety Management System). Those standards imply the fulfilment of several procedures and requirements that after implemented can guarantee, or not, the certification by a third entity. Certification is an optional, autonomous and voluntary process and was seen in Mora as an important element to strengthen follow-up work and measures, and to assure some continuity. Even if more suitable to improve the performance of private sector companies, those standards are increasingly attractive for local authorities worldwide (Emilsson 2005)[14]. Generally, the main steps that are required by those standards, and that were applied in Mora, are the establishment of a *policy* (for quality, environment and safety in this case) followed by the definition of concrete *objectives and targets*, and the elaboration of annual *management programmes* in order to operationalise the actions required to achieve the objectives. They also require a somewhat extensive written documentation, which led to a general feeling that there was more bureaucracy to comply to in the local council after implementing the IMS.

[14] See Emilsson (2005) for a concrete evaluation of local authorities' work with environmental management systems in Sweden.

The process was officially certificated two years after its beginning, in May 2006, by APCER (*Associação Portuguesa de Certificação*, which is a Portuguese private organization dedicated to the certification of management systems). Because of this certification process, it is compulsory for the local council to carry out a certification audit every year to evaluate its work and progress. The whole process in Mora attains unusual importance especially when one analyses the experiences of countries like Sweden, where local authorities have been working with the environmental management system (EMS) since 1994, for instance, and where it is fairly rare that local authorities opt for certification (only one Swedish local council had certified all of its departments for only one standard – EMS - in 2005)[15].

As it was already mentioned, the fundamental goals of such a process were the improvement of the local council performance for local citizens and also for its employees, and a simultaneous need for environmental protection of Mora.

> "The Local Council of Mora (LCM) has a Management System (…), together with the respect for all legal obligations of Local Authorities, to allow for mechanisms and procedures that ensure citizens the respect for their needs and expectations, improving the organization of the LCM, protecting the environment and preserving the safety and health of all its employees." (CMM 2006, p.12)

When the interviews were conducted in March 2008, the project had already reached some maturity and new steps were being taken to tackle the main difficulties encountered and to go forth with the decision to implement a fourth international standard concerning social responsibility: the Social Accountability Norm SA 8000 established by SAI (Social Accountability International). The commitment to this new norm clearly demonstrates a coherent and consistent dedication to enforce accountability and transparency in the local council, which reflects concern with the well-being of employees. Furthermore, the project intends to increase their motivation and adherence to organisational values and to involve all the other stakeholders in the work of the local council (suppliers, local parishes, etc., and even citizens). It is going to be the first local council, and maybe the first public service, to have applied this management system.

When the first goals were formally established, the most important objectives were to develop different activity plans along with evaluation indicators for each of them. Clear objectives were set up and published through several publications, such as the 'Guide to citizens' or the website of the local council, among different stakeholders and local companies. Measurable targets and related indicators were then defined and the first global monitoring report prepared by the end of 2006.

Because the local council decided to implement the IMS in all its departments, a critical action was to establish, and to report within the organisation, the responsibilities for the process. In accordance with the political commitment assumed by the Mayor, he was in charge of defining and approving the overall policy and the necessary resources for its implementation. The general political coordination of the system was in the hands of other political councillors. This coordination role has been changing over the years due to political or other changes and currently the chief-coordinator is a young councillor, who believes that the IMS is the best 'thing' that someone coming from the private sector (as he did) can find in a local council. This political coordination function is

[15]Instead, local authorities adopt a simplified and informal management system, that although it is based on international standards, it is tailored to their local needs and they do not take certification too seriously (Emilsson, 2005).

perceived as vital for the credibility and support of all the efforts employed by public officers.

> "Concerning the political executive body, they all had to have training courses, and also had to be involved in what the working group was doing, not as much in every meeting, but, for instance, the councillor responsible for the system is always present at the meetings, to wish us all, at the very least, good work. But his presence, even if small, is important, and it's important to receive his support." (Interview 20)

For each individual system (quality, environment and occupational health and security) a different public officer was held responsible, but those responsibilities have also been changing over time. At the time the interviews were conducted, only one public officer was the main responsible for the whole system, with operational responsibilities of guiding all the departments in the three standards and of making the bridge with the executive body. Currently, there is one public officer responsible for each system. Furthermore, several different public officers have an internal auditing function.

> "We have a team of very competent internal auditors. We make two or three internal audits each year with our staff. Our internal auditors go to every sector to see how things are. And after that, they make a report. And I thought that now that they are internal auditors, their colleges will not respect them or their decisions, but no! Who was doing wrong accepted the recommendations." (Interview 18)

The most interesting administrative change in the local council was the definition of a *working group* composed of eight public officers that are the heads of all the departments and services. It is a transversal and dynamic group, which comes together at least once a month to discuss several matters. The communication and interaction between all departments within this working group was a key step for the whole system and for the organisation of the local council.

> "Since the beginning, we [the working group] were always being requested, for this and that, to work with the specific processes of each sector or division, and so we have come to the conclusion that it was best to create a working group. It was easier to come together to discuss things and arrive to common solutions for all. In the beginning, all of them were always being requested for the private consultant company to understand the local council's reality, and that kind of things." (Interview 20)

Since May 2008, one elected representative of the employees is also part of the working group with the dual responsibility of informing the employees of all the actions taken by the working group and to report to the group the opinions of the employees.

It has been a long, expensive and time-consuming process, particularly concerning financial and human resources. It was not an easy option and it required a considerable monetary effort, and only a small portion was financed by European funds, namely some training programmes.

> (…) "We have spent thousands of Euros to transform, so to speak, our local council. The costs are high, very high for our budget. It was a political option. We are going to benefit from the system in an indirect way. But initially, the costs are high!" (Interview 18)

The main features of the indicator system

Table 6.7 – Outline of Mora Indicator System

Responsibility for Indicators	Working Group and IMS Responsible
Main Goals	To monitor targets, goals and the general policy of the IMS; to provide background information for decision-making and to disclose information to several stakeholders (mainly internal but also some external)
Dimensions of SD/ Conceptual Model	Basic environmental issues, limited social themes (only related to occupational health and safety of workers of the local authority and to citizen's satisfaction with local public services)
	Safety and health of workers (13 indicators) and Environment (22 indicators)
Nº of Indicators	Varying number of indicators from satisfaction inquiries (they are not systematically established but are dependent on the number and typology of questionnaires)
Headline Ind.	No
Fact Sheet Items	Theme/area according to the IMS; name of the indicator; brief description; unit and forms of measurement; periodicity; responsibility for collection; data sources registration; target group to communicate and respective periodicity.
Criteria	Although the main criteria were not officially defined, according to the interviews they were defined as: relevance; link to the main targets and defined actions; compliance with legal obligations; adequate/useful for the local scale; and, feasibility in terms of systematic data collection methods.
Target Group	Mainly decision-makers and officers. For some specific indicators there are specific target groups (such as workers, citizens, suppliers, local parishes, etc.)
Communication Strategy	There is not a defined communication strategy in general, but instead there are several mechanisms to report some indicators (mainly the ones required by law).

After a rigorous analysis of the extensive internal documentation produced by the local council and also based on the interviews (conducted in 2008), it was possible to identify three types of indicator sets, although they have been annually updated, changed and improved: (i) a first group of nearly 50 performance indicators associated with annual management programme goals to check progress towards the defined actions (because it focuses solely on performance, this set is of no interest for this study); (ii) a second group of indicators that is obtained from several questionnaires to evaluate citizens' satisfaction with the local council services (external) and to evaluate local council employees' satisfaction with working conditions (internal). These indicators were quite disperse and were not integrated in one particular set at the time the interviews were conducted; (iii) finally, a group of 35 monitoring indicators associated with environmental aspects and occupational health and safety in the organisation, the *Measurement and Monitoring Plan*, which is the group of indicators analysed here (see Appendix IX). In 2010, they were enlarged to 50 indicators to incorporate human resources, sports, cultural and social activities (see also Appendix IX). This indicator set was currently named the *Strategic Indicator Map* of the local council and is likely to evolve as soon as the project matures.

The outline of the indicator set is summarised in Table 6.7. Indicators from the Measurement and Monitoring Plan are very much statistics-oriented and reflect a traditional approach of basic

environmental needs and issues (waste management, waste water treatment, water supply systems quality, etc.) and the direct impacts of the local council on the environment (such as resource use, transports, etc.) and on the health and safety of their employees (such as occupational diseases, accidents, etc.). Because of the lack of data and the absence of a culture to collect and analyse data for several years, the first option was to design monitoring indicators in order to provide such a basic structure. So, the first aim was to achieve indicators that could guide actions to comply with legal obligations, to provide an environmental diagnosis and risk assessment of the local council (and not of the village), to educate and inform citizens and other local stakeholders, as well as employees, about their environmental impacts (and safety risks, for employees). In a second stage, the aim was also to find indicators that could help them to assess impacts, to monitor evolution towards targets, and to comply with regular audits.

The challenge now seems to be the introduction of more complex and broader issues, as well as indicators that will encompass development aspects of the whole village, as a sign of maturity of the process, as it happened in the beginning of 2010 with the consolidation of the *Strategic Indicator Map*. The ongoing LA21 process may provide further impetus for those efforts in the future.

The process of developing the indicator system and the actors involved

All departments and divisions have been actively involved in the process of building the management system and, particularly the indicators, through the working group. Indicators sprung from the daily work of the public officers that were part of the working group and from the routines and needs of the IMS. The group had total autonomy and power to define and choose the more suitable indicators for them and also to supervise all the actions, problems and challenges of the daily implementation of the system. As it was stressed before, they also had the support of politicians, which made them feel responsible for the indicators, for monitoring the whole process and ultimately for the whole system as well. The feeling of ownership and commitment of this working group has been the key to the success of the IMS within the organisation.

In addition, the representative of the employees has been active since he joined the working group. He made some concrete proposals to change indicators, which were approved and carried out, although he felt at the time of the interviews that he needed to learn more about his role in the working group, his role among colleagues, and his role in the executive body, in order to enhance his capacity to contribute. The option to include a representative of the employees in the working group represents the efforts undertaken to increase transparency and trust within the organisation.

Experts from the private team hired to guide the implementation of the process had an important role in training and providing tools for politicians and public officers to work with. But the most important part of the work around indicators was carried out internally, within the working group, with limited help from experts. The young local councillor was also an important actor, who was mainly involved in the definition of the environmental indicators. Because he was also the politician responsible for the environmental area, he felt the need for data to support decisions.

So far, the role of citizens or other local stakeholders regarding indicators is merely passive. They are but target groups to inform, that receive some of the information gathered from the indicators

(mainly the ones that are compulsory by law). Nevertheless, it should be stressed that the organisation considers of the utmost importance to collect some opinions about citizens' satisfaction concerning local council services (like schools, municipal swimming pool, internet public space, cinema, library, etc.) through several and diverse questionnaires. In fact, they do take them into account when making decisions and changing policies. But their role ends there, at least before the LA21 process started.

Indicators are not considered to be 'closed', in the sense that new information is always coming up, new collection capacities achieved, new goals and challenges established, among other factors. It is also acknowledged the changes in the number of indicators and the fact that the implementation of the new social responsibility standard and of LA21 is very important for the future of the indicator set. This means, that the six years of analysis of this case-study (2005-2009) represent a mere beginning of a promising role for indicators. Much should be analysed from now on.

Finally, the communication strategy is only designed to report the indicators to the executive body (from the working group). The main communication channels are monthly reports when necessary and annual monitoring plans which include all the indicator sets and the results of the questionnaires to citizens and employees. Some other sporadic channels are also employed to disclose certain indicators to employees, to local companies and other stakeholders, and to citizens, but not on a regular basis. This also seems to be changing in a near future, as the need to report to other stakeholders, internally and externally, in a more transparent way is a requirement of the social responsibility standard.

The importance of the set for local governance and its different uses

Importance of the set in the context of local sustainable development

Before defining the indicators, data had not been collected in the organisation for years, little information was registered and even when it was registered it was not analysed, for some reason. Most actions or routine procedures were based on a 'phone policy' and passed by 'word of mouth'. In a context like this, the compulsory demand to register, to collect data and to build a monitoring plan driven by the IMS was a big step. The foremost benefit was then the ability to structure and organise information and to provide a more solid basis to evaluate their work:

> "(…) everything was done because things were done like that in the past, because they [employees] knew that it couldn't be the other way around, because they had tried once and it didn't work out… Indicators were passed by word of mouth." (Interview 19)

The criteria to select indicators were selected in accordance with internal and managerial goals: measurability, capacity to relate to targets and goals, relevance for the local scale, availability and capacity to collect data. These criteria were considered important for both public officers and politicians.

Politicians consider the indicators as management tools that public officers must use (it is one of their responsibilities) and trust the capacity of public officers to deliver them the information they need for decision-making. They feel that now, with the monitoring system in place, they are able to make better decisions for citizens. Politicians also consider that indicators are useful to inform

citizens, but the role of public participation is already 'sufficient' through the channels they have created to collect citizen's opinions: questionnaires and some sporadic meetings. They do feel that their way of working is the best one for citizens, that people are involved enough, and that demagogic participatory strategies, such as LA21, are not a priority. So, the indicators are perceived as mechanisms that guarantee accountability and legitimacy for decision-making.

> "When I want to make a decision… I don't have any interest in doing things against people's will. We can only do that by asking people what they want, but I don't do that in a demagogic way. I know how the others [politicians] do that… we don't work like that. When we ask people, or when we do a questionnaire about something (playgrounds in schools, changes in traffic directions, etc.), it's to know if they agree with that decision or not, and why. And sometimes we do get opinions that make us change decisions already made, because we think 'this person is right'. So, here in our local council, our work is for the people." (Interview 18)

For public officers, indicators are a recent but fundamental tool for their own internal work, a way to understand how several actions are interrelated within the local council's work and 'something that they cannot live without anymore'. The synergies created within the working group have enabled all the sectors to better understand environmental challenges and safety risks and the need for data collection. In this sense, indicators are also perceived as mainly technical tools for internal management purposes, although they are considered useful mechanisms to inform employees and citizens too. So far, they are not understood as something that citizens can contribute to. But even regarding informing citizens through the indicators, some employees feel that there is still much to do:

> "I have major doubts that citizens know about this [IMS]. And I really think that things can only work out if citizens are interested, if citizens understand that the local council and its employees are really working for them, helping to manage a space that, in the end, belongs to all of us. If citizens are not aware of this and aren't trying to understand what is going on, it is pointless to implement such a system. I love sports, but when I try to see a rugby game I don't know what they are doing. If I don't understand, I will not be interested in seeing it. But if I do understand…" (…) So, one of the things that I want to present in the working group and that I really find necessary is (…) to make this kind of marketing, to explain what are the goals, to tell citizens what they can expect and benefit from this (…). We need them [citizens] to see us [employees] from a better perspective."(Interview 22)

Governance changes and challenges

The political decision to start such an ambitious process was made one year before the period of elections. This crucial period was not an excuse to postpone a project considered as fundamental. Leadership and commitment to the project were crucial ingredients to strengthen capacities within the local organisation for its implementation. One can consider that behind those efforts were pure intentions to improve performance and efficiency in the local council. In this sense, it could be argued that this search for efficiency was targeting external (political) benefits and recognition, but this seems not to be the case of Mora. Instead, there is a real belief that all public organisations would have to improve their working practices sooner or later. Legitimacy was therefore enforced

through the application of renowned international standards and procedures.

Public officers and politicians agreed that since 2004, the whole IMS process has inspired change, has motivated the appearance of new knowledge and capacities in the local council and has provoked a 'minor revolution' in the working routines of everyone. Organisational learning is identified as a crucial outcome.

> "There was a time that we just had to stop and think: 'well, even if we cannot get to the end, even if we cannot get the certification, it was really worthy to arrive here. The improvements that we have made so far are amazing: we have changed almost 300 procedures. In a system like this and in a small local council like ours, 300 procedures is a lot. And some of them are complex and very difficult to change, it's not a question of 'entering this door instead of the other for a matter of saving time', which means that we had very complex things that we were able to transform." (Interview 18)

Although the support of the consultant company is found valuable to provide them with new knowledge and capacities, they feel that the process is already internalised in the organisation, and that they are able to go on by themselves. The IMS can be considered to be now part of the organisational culture, to have changed organisational values and spread new motivations, new ways of working, new knowledge, new feelings and attitudes among politicians, public officers and employees. Indicators are then seen as a part of this government change towards more efficiency and also play an imperative role in the current challenges towards more openness, transparency and democracy regarding the implementation of LA21 and the social responsibility standard.

Different uses of the set

Indicators have now been collected for some years and the institutionalization of processes and routines is quite strong. There is an unambiguous definition of responsibilities for their collection, there are several procedures in place to assure its continuity and they also generated the feeling that there is no coming back. It is not easy to evaluate concrete or conceptual results, specifically for the use of the indicators per se, as they are inserted in a major process that produced several changes in the organisational culture, values and way of working. Nevertheless, politicians are keen to affirm that indicators do give them more and more information about areas where they need to intervene and that they are very helpful to revise old plans or to define new actions or strategies.

> "Our goal is to make the next electoral programme based on the real indicators that we have, at all levels. (…) I don't know if I'm here [at the local council] in two years time, I will probably not, but I know that whoever comes after me will surely have the indicators and will use them." (Interview 19)

> "Lately, the political executive body asked for all the indicators. They know that we [public officers] have all the indicators at hand, and when journalists come or someone comes, they just ask for the indicators and we give them immediately. Until now, no one missed the indicators, but now they are always being requested, all the time." (Interview 20)

Public officers declare that indicators changed some routines by themselves and made the efforts of the local council visible and to transformed them into tangible numbers. They have effectively been used for every technical task and for very different purposes. Access to data and comparing the evolution of some indicators is now a reality which resulted from the compulsory need to establish clear goals and targets and to monitor progress.

Finally, with the beginning of the LA21 process in 2009, these indicators have contributed to the elaboration of a Sustainability Diagnosis and provided a basis for a discussion forum for guest-local organizations. This report was mainly developed by a team of experts, supported by public officers of the Local Council and had as a working basis a pilot project of the APA. This project has been receiving several critiques by academics and practitioners in Portugal, as it supports the implementation of LA21 strategies based on standardised management systems. This issue deserves much attention in the current panorama of LA21 processes in Portugal and it is a potentially interesting research space for future investigations.

6.8. The Case of Palmela – Monitoring Territorial Development and a Demanding Information System

The driving-force project and administrative context

The Local Master Plan of Palmela was approved in 1997, and since then urban monitoring and plan evaluation assumed major relevance because of the specific territorial complexities of the municipality[16]. These complexities have long generated the need to support decision-making with monitoring mechanisms and instruments that would enable a permanent assessment of trends and changes in territorial dynamics. As such, in 1998 the Local Council of Palmela decided to establish a Spatial Information Division in the Planning Department, equipped with a Geographic Information System (GIS). Two years later, in 2000, it further intensified these evaluation aspirations with the establishment of an Economic and Social Observatory. Curiously, the idea to create this Observatory, that preceded the establishment of the Indicator System, was initially developed in the cultural department inspired by some experiences in the region of Barcelona (Spain), such as the *Economic Observatory of Terraza*, the *Cultural Observatory of Sabadel*, and the *Interarts Observatory of Barcelona*. A close contact with these experiences enabled to pursuit a similar idea in Palmela: the Observatory was then transposed to the Planning Department with the aim of becoming a transversal Observatory, not restricted to cultural or economic issues.

The proposal to develop an *Indicator Set for Land-Use Monitoring of Palmela* (*Sistema de Monitorização do Ordenamento do Território de Palmela*) was born in this context in 2002. Another crucial influence that has boosted this initiative was the need to comply with national planning regulations regarding the evaluation of the Local Master Plans. The Framework Law on Territorial and Urban Planning (Law 48/98 of 11/08) and related regulations have, among other things, made it necessary to promote local and national assessments of planning-related policies and decisions. According to these regulations, the National Planning Authority, the Coordination Commissions for Regional Development and the Municipalities are responsible for preparing a report on the evaluation of plans every two years (see Fidélis 2007 for an insight on the matter). Such a procedure was to be supported by the establishment of a National Planning Observatory and a national database (Decrete-Law 380/99), but no steps have been taken towards its implementation and no comprehensive national evaluation was ever put into practice in Portugal, nor were any national guidelines established or incentives granted for a local regular assessment. In the absence of such monitoring guidelines or structures, Palmela Local Council decided to build its own local reference framework and indicators, aiming not only to evaluate territorial development in its strict (physical) sense, but also to monitor cultural, economic, social and environmental territorial dynamics.

[16] Palmela is characterised by a vast and highly dispersed territory of about 460Km^2, 60.000 inhabitants and low population density. Almost half of its territory is covered by Protected Areas with valuable environmental and cultural heritage, such as the Natural Park of Arrábida, the 2 Natural Reserves of the Sado and the Tagus Estuary and a vast area of protected forests and landscape and agricultural areas. It is also integrated in the Great Metropolitan Region of Lisbon with a strategic location at the regional and national level, which means it is under constant pressure to develop. Its proximity to two of the major Portuguese ports (Setúbal and Sines), a dense network of major highways, the future construction of the Largest National Logistic Platform and the two main national strategic decisions to build the new Airport of Lisbon and the High-speed Train route in the nearby territory create enormous pressures on local planning options and decisions.

The Indicator System was officially established in 2004 in the Economic and Social Observatory. The organizational and administrative restructuring of the Local Council in 2007 defined the creation of the *Unit for Studies and Quality* (USQ), which aimed to integrate the GIS division with the Observatory and the Quality and Training area, under direct supervision of the Mayor.

The main features of the indicator system

Table 6.8 – Outline of Palmela Indicator System

Responsibility for Indicators	Unit for Studies and Quality of Palmela's Local Council
Main Goals	Setting up an information infrastructure to support decision-making and therefore monitor cultural, economic, social and environmental territorial dynamics, as well as the citizens' satisfaction level in certain essential domains and the quality and efficacy of municipal management and administration. At a second level, it was meant to inform citizens about local trends.
Dimensions of SD/ Conceptual Model	Broad scope, involving six main areas: *Social Cohesion; Collective Facilities; Economic Structure; Municipal Management and Administration; Land Use Planning; Population and the Environment.*
Nº of Indicators	128 quantitative indicators and two qualitative surveys of the citizens' perception of quality of life in the city (2004 and 2008).
Headline Ind.	No
Fact Sheet Items	Code and indicator name; major theme and sub-theme; brief description of the indicator; its variables; type of graphic associated; unit(s) and scale of measurement; data source(s); periodicity; methodology; spatial unit; thematic project; and observations.
Criteria	The choice of indicators was based on other experiences and projects, and on a bibliography review of similar indicator sets (at national and international level). Additional criteria were: availability of data, reliability, relevance, and a certain level of comparability with European indicators.
Target Group	Primarily, the most important target group was Palmela local council and all its internal structure (to support decision-making). At a second level, indicators were to be provided to other local actors/institutions and citizens.
Communication Strategy	The internal communication strategy was enforced by the channels created by the indicator infrastructure and reinforced by an organizational restructuring in 2007. A recognised major failure is the existence of ineffective tools to communicate with citizens and therefore, currently, one of the biggest aims of the project is the enforcement of an external communication strategy (to communicate with citizens).

The *Indicator Set for Land-Use Monitoring of Palmela* was established in 2004 and it covers a list of 128 indicators, divided into 6 different areas, as depicted in Table 6.8 (see also Appendix X), ranging from the population and the environment to land use planning, economic structure, collective facilities, social cohesion and municipal management and administration. A fact-sheet was designed to identify and characterise each indicator, describing its main variables, the information sources, among other elements. It is a detailed sheet with all the indispensable information associated to one indicator, although targets or goals associated with the corresponding indicator are missing.

Indicators are updated continuously since then, depending on the availability of data, to support internal decision-making. A demanding structure of external and internal sources, along with the need to complement the information with specific surveys or field evaluations from time to time, are some of the challenges to maintain and update the set, which counts with effective technical and human resources.

The disclosure of those indicators to the outside of the Local Council is the weakest part of the project, in opposition to the dynamics created within the departments. The set continues to receive much attention and support from the local council and a major step towards the improvement of external communication tools is under consideration.

The process of developing the indicator system and the actors involved

In 2002, Palmela Local Council decided to develop an indicator set to monitor its territorial dynamics and trends in the social, economic, cultural and environmental domains, following an initial idea to establish an Economic and Social Observatory. As it was stressed before, some few years before, the municipality had already invested in the creation of a Geographic Information Division, with the support of a Geographical Information System (GIS) and all its necessary logistic, in terms of technical resources and human capital. This investment implied an effort that should not be ignored, particularly at that time, not only because of its high cost and implicit efficient management of resources, but also because of what the introduction of a specific GIS system means in a municipality, bearing in mind its high technological complexity. This division was placed in the Planning Department to support the evaluation process of the Local Master Plan of 1997. At the same time, a proposal started to emerge in order to expand this monitoring capacity to other areas besides physical planning. Furthermore, the Cultural Department, influenced by some experiences in the region of Barcelona, decided to support the establishment of an Economic and Social Observatory (Observatory hereafter) at the local level.

A close contact with a local citizen with a significant role in the cultural area triggered the visit of some people from the Cultural Department to Barcelona to learn from the observatory projects carried out there. With the creation of the Observatory in 2000, it was soon realised that there was a need for a close interconnection with the GIS structure and for that reason the Observatory was also located in the Planning Department, in order to potentiate the communication between the two divisions and enforce the network of information.

> "It was acknowledged that is was important for the local council to have access to analysed information, which would allow to monitor the local reality and to support decision-making (…) to do so a support structure was needed. Because it's not enough to, periodically, call upon some members of the organization to provide information, more than this is required. There is the need to have an information system, to have a technological infrastructure and human resources with specialised knowledge in the area, and that was, in my view, the major step that was taken." (Interview 30)

These preceding steps generated favourable conditions for the development of a generalised monitoring culture and enforced a strategic vision towards the creation of the *Indicator Set for Land-Use Monitoring of Palmela* in the Observatory. As such, this initiative started with an invitation to an expert on Local Master Plans' evaluation, from the Technical University of Lisbon, to collaborate in the process of defining the indicators. Thereafter (2002), a major dilemma emerged between the choice of adopting a similar international indicator set or building a particular one, tailored to local specificities. A vast compilation of bibliography on other experiences and similar projects – such as the Urban Audit and the Oporto experience, the ECI, and the NSDIS, among others – was carried out by the Observatory team. Expert orientations pointed to the relevance of

adjusting the methodology and the indicators to local needs and that was the basic line that was to be followed.

Subsequently, the next steps targeted the debate of the strategic goals of the municipality and counted with the involvement of all heads of departments and services with operational roles. Their opinions were considered essential to mould the indicators to particular sectoral needs, programmes and plans. Likewise, three meetings were prepared with several public officers from different divisions to discuss the slogan '*It is good to live in this municipality*'. These debates allowed to gather varied opinions about the needs, problems and strengths of Palmela in general and also to realise about the weaknesses and opportunities faced by every department. With this process, it was possible to identify common clusters to assess and indicators to represent them.

A long list of potential indicators was elaborated and the challenge was to reduce it considering the available data, relevance to local aspects and the capacity to compare them with other international indicators, such as the ECI. A very important aspect to take into account was the reliability of the data. A following stage was to identify possible variables for each indicator and all the procedures, routines and methodologies that had to be assured by internal and external sources in order to collect, process and treat different types of information. After that, the whole process was coordinated by the Observatory team in close collaboration with each division.

An essential step was the nomination of an 'antenna' in each and every division – as all were sources of some kind of data – and the effort to keep the same interlocutor that the GIS structure already had nominated for some sectors. Through these 'antennas', contact was facilitated to guarantee a firm and solid interaction between the Observatory and the different departments. This work was not equally successful in every division, as some were more available and cooperative than others. Of particular importance was - and still is - the difficulty that the Environment Department had to provide information on some areas, such as green spaces and urban environment, as it represented one of the biggest departments (in terms of competencies and also number of employees) which was struggling with the lack of human resources.

In regard to external information sources, several informal procedures were established with some public and private organisations, such as the National Statistics Institute, the Ministry of Labour and Social Solidarity, Portuguese Telecom, Gas or Cable Television operators, etc. However, several procedures are hard to develop, for they imply huge financial costs, such as subcontracting external services to collect data and fill in information gaps.

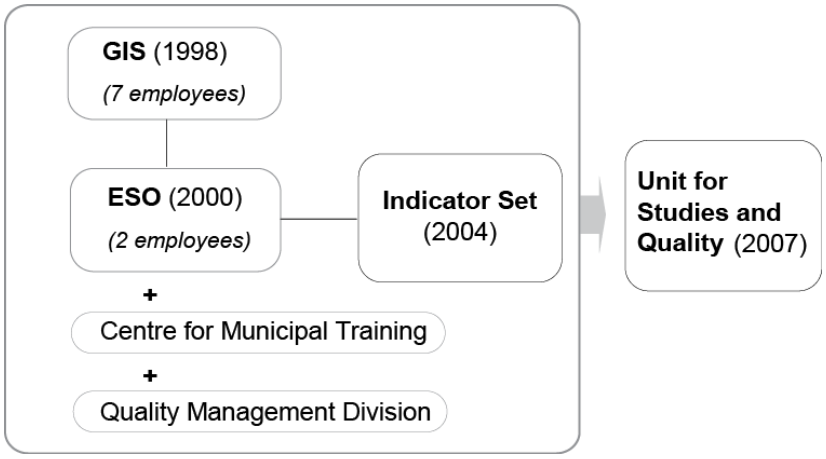
> "There are several information gaps at the municipal and infra-municipal level. (…) And, therefore, this means that we make a great effort to produce information. Several times it's internal information that already exists and all that's necessary is the concern to gather it and to have some procedure to collect it. Now, some other times there's, indeed, and when we start from zero, the need to apply exhaustive data collection methods, or periodic surveys, and that's very expensive." (Interview 30)

Nonetheless, several surveys were already implemented by the local council, representing a major financial effort to gather data that is not easily available, such as a commercial and services survey (meant to be carried out every four years), one survey on economic agents about their economic

expectations and two citizen surveys about quality of life in the municipality, which enabled the comparison between qualitative and quantitative data.

These attempts to consolidate this information infrastructure over the years have been carried out with the necessary political support from the Mayor, who has been in power since 2001. Finally, it is relevant to stress that the project is inserted, particularly after the consolidation of the USQ in 2007, in a very strong and cohesive Unit (supported by a relatively important number of employees) that is equidistant to all departments and is in a particular key position to be in contact and develop a concrete communication strategy within the local council (see Figure 6.2).

Figure 6.2 – Structure of the *Unit for Studies and Quality (USQ)*



The importance of the set for local governance and its different uses

Importance of the set in the context of local sustainable development

The effort to evaluate the importance of the indicators for local sustainability in Palmela is particularly constrained by the unsuccessful attempts to bring forth a direct opinion of local politicians about the work around the monitoring system, just like in Oporto or Oeiras. Consequently, this analysis does not provide the same angle of political perceptions, as expressed in the other case-studies, and the effort to confront political with technical views about the indicators is therefore somewhat narrow. Political positions are thus inferred indirectly by all the other pieces of information gathered for this case.

Nonetheless, some conclusions on the political support to the indicators are irrefutable. Major financial resources have been supporting the operationalization of the GIS and the maintenance of the indicators with a considerable number of employees working permanently on it. Moreover, there is a clear political vision which sees the usefulness of the solid information structure as a major duty of the USQ to support local decision-making at all levels.

> "I: Have you been receiving political support towards the initiatives associated with the monitoring system?
> X: Yes, I believe so. As I'm the interlocutor with the political part, I do believe so. I think this support continues to exist. Recently there was the need to hire another person for the Observatory and that did happen. The GIS team has also been stable over time, the

> number of employees didn't diminish, and it must be said that the local council still spends a significant portion of its budget on it (…) From our part, and above all, from mine, as head of the Unit, there's a concern to constantly show to the local council that the investment is worth it. And, therefore, there's a major concern to produce current and periodic reports (…) We elaborate them with all the divisions and try to evidence the production and importance of that information. (…)
> X: I do think that the Mayor has some idea that this [the indicator set] doesn't exist in other municipalities, specially because she was the President of the Municipal Association for a long time and was Vice-President of the Greater Metropolitan Region of Lisbon, so she certainly understands that. But I think that the rest of the political executive body doesn't have such a clear idea [about it], because they are not in direct contact with us, only sometimes." (Interview 30)

The Mayor also issued a 'green light' to invite an expert to provide technical knowledge and facilitate the development process. The role of the expert was considered to be essential and his contribution was very productive because of the joint work carried out and the close collaboration with the Observatory coordination group. This working relationship proved to be more useful than contracting an external company to develop the indicators, because it provided stronger autonomy and more technical capacity to the local council to handle the indicators. Moreover, it generated a stronger feeling of ownership in the coordination group.

The acknowledgement of the responsibility and importance of all the work that the indicators represent is very present in the USQ and its staff. This feeling of accountability can be found in the straightforward dialogue and collaboration that the Observatory establishes with all other departments, for instance. This contact was already close, but was reinforced by the organizational restructuring in 2007 (and the consequent establishment of the USQ). They operate as consultants for any data management requests within the local council, such as revising or elaborating new questionnaires, designing and building databases or treating data. This transversal work enables a stronger exchange of information between departments beyond the one required by the indicator set. The Unit receives several requests for all sort of aspects related to the production of sectoral information on any department or division.

Since the beginning of this local monitoring project, there was the perception that the major target group for the information should be the local council and its internal structure. As the major goals were to support decision-making, to better manage land-use instruments and monitor local actions and plans, the primary unequivocal target group was the local council. Hence, it is clear that this ambition was accomplished, although there are still some difficulties to overcome, such as the establishment of goals and targets associated with some specific indicators.

A second major target group was necessarily the local population, because the indicator set was also perceived as a tool to inform citizens about local development. This target group, although assumed as relevant for the project since its creation, ended up being neglected by the malfunctioning of some initiatives, such as the attempts to create one particular software that would enable citizens to visualize data and select specific information; or to produce a written publication as a kind of local statistical yearbook. Moreover, in the absence of headline indicators that could ease external communication and summarize the indicators message, the only information available in the local council's website regarding the indicators is limited to a few statistics.

> "The software application to publish data for the public in general was commissioned externally [to a company], and that was the one that didn't go so well." (Interview 31)

However, the merits of the global project for internal management are undoubtedly important and prevail over the indicator set itself. When asked about the major result around all this work, the answer point to the continuity and stability of the information structure as a whole:

> "Continuity, in the sense that it's a structure that, I think, isn't questioned. It's true that it has a long way to go in order to improve, of course that's true! Our external communication failed completely. We have to try to overcome this difficulty. But our major concern was to answer internal needs, and that was done. Now, in fact, I think that it's important that we improve qualitatively in that sense." (Interview 30)

Governance changes and challenges

Visibly, internal management efficiency values nurtured the project and have been constant since it is in place. In contrast, democratic values were considered merely in terms of recognising the indicators as information tools that could provide more knowledge to citizens and that would enable them to participate with further information. The indicators were not considered, however, as a new process that could be used to bring innovative community participation techniques or to bring into discussion new visions on quality of life or local sustainable development.

> "The role of monitoring was always perceived as a way to improve management, land-use management instruments and the municipal plans and actions on their own. And to do so, it makes sense that the citizens are better informed, that the citizens participate with more knowledge about what happens in the territory." (Interview 30)

The reason for not considering public participation relevant to the indicators' definition was based on the common feeling that citizens would not be able to give a positive and interesting contribution to the set. The absence of universities or research institutions in the municipality determined the feeling that citizens or local actors would not have the capability, ability and willingness to contribute to such a technical matter.

> "No, not our municipality! We didn't feel that [public participation] could have, that there were interlocutors that could help us in this aspect. If there were any universities in our municipality, or, perhaps, associations that were concerned with these research questions… (…) no, the question might have been raised, given the opportunity, but no, we didn't feel that we had any interlocutors." (Interview 30)

As a consequence, the legitimacy ascribed to the indicators derives from this technical rationale based on efficiency goals. The whole process tried to assure the provision of credibility and technical consistency to the project: external and expert support, an extensive bibliography review of other experiences, the involvement of internal actors and departments in the indicators definition and the convergence of their activities and goals with the interests of the set. In this technical effort to develop and maintain the indicator set, some everyday obstacles and challenges still persist. Interestingly, they are faced with innovative solutions and constant work and dedication from the USQ to improve the set's function. Some of the main problems recognised are: the difficulty to

collect some data, mainly in the environmental domain, which is impoverishing the set comprehensiveness, and the capability to disclose the indicators to local actors.

> "I think that it's necessary a great deal of endurance to obtain information. Because, in fact, it's the only difficulty. Even with our services, it's hard some times. It's necessary to insist, and insist, and sometimes, to come up with solutions. As we have to come up with solutions to face our difficulties, to find any solution that allows our colleges from the unit to… because they don't have the resources to collect data, sometimes, we have to make things up, for instance, internships or other solutions to overcome some of these flaws." (Interview 30)

Other challenges seem to be the cooperation with other municipalities of the region to support the establishment of an indicator set to monitor regional development, although several efforts were made by the USQ towards this goal. These endeavours were unsuccessful for several reasons. Firstly, at the municipal level, and although some contacts have been made to learn from the Palmela experience, other local councils seem to start developing some indicator sets, which only target specific areas or sectors, without a comprehensive view:

> "But now, it's in fashion, you know? I think that they [other municipalities] don't know very well what they are dealing with and what they are doing! Then, some are created through the initiative of the business support office, and it's only an economic observatory!" (Interview 30)

Secondly, another reason is the poor dynamism and interaction with the CCRD of Lisbon and Tagus Valley regarding those matters, which have devitalised some of the steps that had been already taken towards a regional monitoring system:

> "We have some connection [with the CCRD] through a protocol that we established in 2004, 2005 or so, precisely with Palmela, Mafra and, other municipality that I can't now recall, in order to participate in a pilot experience in the monitoring of local master plans. We provided our work, collaborated with them in designing the databases and we never had any feedback." (Interview 30)

The absence of a formal regional strategic vision towards monitoring systems and the poor regional coordination and integration of policies among municipalities inhibits these experiences.

> "There has been [an attempt], on my part, just last year, with the Association of Municipalities of the Setúbal Region, but without success, and it had to do with a measure of the Operational Programme of Lisbon and Tagus Valley, that was about institutional capacity that allowed to allocate funds for the creation of that type of regional structures. I did, indeed, an informal approach, several approaches in fact, but didn't get anything out of it. To start with, this isn't strategic! Secondly, there's another huge difficulty and that's to work in intermunicipal partnerships, isn't it? Without [administrative] regions and regionalisation, each municipality (…) has different realities, different priorities, different goals, and so, to conciliate different wills for something that is not strategic, is very difficult. (…) So, I have a draft of the idea. I think

> it makes a lot of sense, and I think we can benefit from a significant scale economy, but the opportunity didn't arouse..." (Interview 30)

Different uses of the set

The Palmela indicator system has been used intensively in several ways and is functioning as a catalyser for internal management. Indicators have been constantly updated, although at different rates, depending on the availability of data. Furthermore, data has been constantly exchanged within the local council structure since its creation, and particularly since the set up of the Unit for Studies and Quality in 2007, that came to reinforce the system and the information infrastructure.

Several political requests are made to the Unit in order to provide information to political meetings or to make some decisions or to provide data to the media, etc. In addition, the Unit receives numerous external demands for information:

> "We have many internal and external requests that make us use that database in order to answer them (…) There are several private companies that ask for information, people that are doing studies on environmental impact, questions on security, companies that (…) are doing market surveys on clients with certain characteristics, companies that want to know more about the local market. There's a bit of everything." (Interview 31)

Internally, the Unit also provides support to different departments and divisions in the development and/or monitoring of specific programmes or plans, such as the Education Chart, Land-Use report chapters, LA21 first steps, quality performance assessments of the local council services to citizens, just to name a few. A serious effort is made to gather important data that is not easily available through surveys to local citizens and companies. For instance, two major assessments of the citizens' perception of the quality of life in Palmela were carried out in 2004 and 2008. These surveys not only enable the Unit to gather information for two indicators of the system, but also, and more importantly, allow it to compare qualitative data with the performance of several sectoral policies and their direct impact on the citizens' life.

In addition to these concrete uses of the indicators, its internal development process generated synergies to a helpful conceptual debate about what was more important to monitor in the municipality's development. It provided room for the harmonization of sectoral goals and strategies and for the incorporation of the diverse perspectives into a common monitoring system.

Some problems associated with the complexity of data management of such a system are the more persistent. Nevertheless, the major setbacks are still associated with the absence of a methodology that would enable the production of periodic reports to evaluate the performance of the whole indicator system, regardless of sectoral requests or reports. The disclosure of indicators to the outside of the local council sphere also remains an unsolved issue.

Finally, we want to end this part with a citation that summarizes the usefulness of the indicators and the whole information structure in Palmela:

"More than the system, itself, I would say that it's the organic unit, the functional sector. And yes, I do think that it was a very important step. In fact, the system still needs developing, and needs to prove its utility. Because, if it's true that we have been using the indicator system for this and that end or request, we still haven't been able to reach the goal of producing a periodic report to analyse the indicators and, it's because of this, that I say that there is still the need to prove its existence." (Interview 30)

6.9. Concluding Remarks

Each case-study clearly has different contours and the role of each sustainability indicator system analysed was as different as their capacity to be developed, maintained and adjusted over time. We were able to get an accurate picture of the roles that sustainability indicators can have, or not, for governance for sustainable development at the local level by bringing together the following elements: the reasons which led each local council to develop their own specific sets, the features of the selected indicators, the actors involved in their selection, the different ways of understanding the importance of indicators for local governance, as well as their different abilities to be updated and used. The next Chapter intends to deepen this understanding using different governance criteria and a typology of uses to assess and compare the findings.

CHAPTER 7
COMPARING THE EXPERIENCES

"*The excitement in knowledge building takes place at the point of collision between and among data and theories*." (Miller 2007, p.15)

7.1. Introduction

This Chapter aims to answer to the two main operational questions of this study and it is therefore divided in two main parts. The first one intends to explore the empirical material through the lenses of the selected ideal framework to try to answer if and in what ways local sustainability indicators have challenged or changed local governance practices for sustainable development. Comparing the experiences using these criteria may provide new learning opportunities and may lead to a better understanding of patterns, problems or type of governance challenges or changes induced by the implementation of local sustainability indicators. This part is divided in seven sections, according to the seven main criteria established. These criteria will be assessed by a qualitative scale which was already described in Chapter 5. This scale generally aims to evaluate the performance of each criterion, i.e., the way its ideal outcomes are more distant or close to its practical or empirical findings, according to 5 different categories: *Very Weak*; *Weak*; *Moderate*; *Strong*; *Very Strong*. Generally, when the empirical findings are very distant from or fail to achieve the ideal outcomes of a criterion, the performance of that criterion for that case-study is categorised as *Very Weak*. In opposition, when the empirical findings are very close or show capability to achieve the ideal outcomes of a criterion, the performance of that criterion for that case-study is categorised as *Very Strong*. The category *Moderate* means that the empirical findings of that case-study are neither too close nor too distant from the ideal outcomes of that criterion. As said, the single purpose of this scale is to facilitate the visual interpretation of the general performance of each criterion and to simplify our findings but it does not dismiss the careful appreciation of each one in context.

Then, the second part tries to sum up some lessons to understand if and in what ways local sustainability indicators have actually been used, focusing on the different uses that the processes around their development have generated in local contexts.

7.2. Analysing and Comparing Experiences with Sustainability Indicators

7.2.1. The Nature of the Indicator System

The *nature of the indicator system* is analysed through three different elements: (a) the *scope* of the indicator set; (b) the *timeframe* that is implicit or explicit in the indicator system; (c) the level of *coherence* of the defined roles for the indicators, their aims and target groups. Through these perspectives, it is possible to figure out the basic knowledge frameworks that contextualise the processes of developing the seven different local sustainability indicators.

Scope

It is assumed and it is in fact a starting point for this study that the indicator systems must be associated to more than a single dimension of sustainability, in order to represent experiences with integrative aims and (more or less) comprehensive visions. Although it is very difficult to draw the line, the projects (case-studies) we studied represent a good attempt to cover broader issues of local development, some in a more strict sense than others. The environment dimension is clearly present in all of them, but only three of the sets can be said to represent a holistic perspective, involving the conventional spheres of economic, social, environmental and institutional matters (Redondo, Oporto and Palmela). The economic dimension is the most undervalued (in Mindelo, Aveiro, Mora and Oeiras), probably because a certain kind of economic data is not always available for the local level (such as local GDP), while at the same time economic data related to inflation or unemployment rates, for instance, is traditionally overvalued and overstated in policy-making and the media. These may justify the poor interest to collect new or different economic information for local systems. Absent or misrepresented issues in almost all of the sets are the ones related to 'soft' or more 'recent' issues of the sustainable development debate, such as Justice (totally absent although assumed as a widely debated and controversial issue in Portuguese democracy), Health (apart from traditional statistics such as 'hospital beds per inhabitants' or 'mortality rate' measured in Oporto and Palmela, for instance) or Democracy and Participation (where there are only a few references to indicators such as 'the number of participants in public decision-making processes' in Mindelo, Aveiro and Redondo, 'the information available to the local citizens', or 'cooperation with the civil society' in Oeiras).

Table 7.1 – The nature of the indicator system

	Scope	*Timeframe*	*Coherence*
Redondo	**Moderate**. Broad, but confusing, with 4 unrelated subsets.	**Very Strong**. Long-term vision of SD	**Weak**. Different subsets with distinct goals; target audiences are not considered.
Mindelo	**Strong**. Mainly covering environment and land-use planning.	**Very Strong**. Long-term vision of SD	**Strong**. Formal link between roles, aims and target groups for the indicators.
Aveiro	**Strong**. Mainly covering environment and social issues.	**Very Strong**. Long-term vision of SD	**Weak**. Conflicting goals and target groups between the ones stated in the plan and the ones assessed through the interviews.
Oeiras	**Strong**. Mainly covering environmental and institutional issues.	**Weak**. Short-term vision of SD	**Strong**. Formal link between roles, aims and target groups for the indicators.
Oporto	**Very Strong**. Covering multiple themes.	**Very Strong**. Long-term vision of SD	**Strong**. Formal link between roles, aims and target groups for the indicators.
Mora	**Strong**. Mainly covering environment and some social issues.	**Moderate**. Medium-term vision of SD	**Very Strong**. Formal and clear link between roles, aims and target groups for the indicators.
Palmela	**Very Strong**. Covering multiple themes.	**Very Strong**. Long-term vision of SD	**Strong**. Formal link between roles, aims and target groups for the indicators.

In the majority of cases it is possible to state that behind the choice of the indicators there is an effort to define what local sustainable development means. In Redondo, Mindelo and Aveiro this was carried out mainly through the LA21 or LEP strategies, in Oeiras it was defined by ABAE, even if not specifically for Oeiras. In Oporto, indicators were decisive for the understanding of what 'quality of life' could mean for the city (at least within local council spheres) and in Palmela this issue was discussed internally, even if not officially and broadly defined. This effort is however less

notorious in the case of Mora, where the indicators represented a first effort to consolidate more basic information in the local council (LC) (related to environmental and internal needs) that was unavailable before broadening its scope in later steps.

Regarding two methodological notes associated with the development of the indicators, it became clear that on the one hand the majority of the experiences did not aim to aggregate measures in one single index to assess sustainability (except Oeiras) and opted for a (longer or shorter) list of indicators, most of them quantitative and statistically structured. Nevertheless, some qualitative indicators are included to complement the quantitative ones. Even if the local authorities were working with a long list of indicators (Palmela, Oporto, Redondo, Aveiro), they did not have the intention to create a shorter set of headline indicators. On the other hand, three sets are based on adaptations of the pressure–state–response (PSR) model (Mindelo, Redondo and Oeiras), but all of them represent an effort to be based on specific theme-based frameworks, which were built to suit the local context (except Oeiras). They were either the result of broader LA21 discussions (Mindelo and Redondo) or of narrower discussions (the involvement of different stakeholders shall be discussed later on in this Chapter).

Timeframe

It is generally acknowledge that a long-term vision for sustainable development is preferable to a short-term one. Almost all the case-studies are targeting medium and/or long-term goals, at least rhetorically. The cases of Mora and Oeiras are exceptions in the sense that their concerns are only expressed in the medium and short-term, which can compromise the true goals of such sets to monitor local trends (particularly in Oeiras). Nonetheless, any timeframe can be compromised if the indicators are not monitored, updated or effectively used. Therefore, the intention to focus on a long-term vision in Redondo, Mindelo or Aveiro can be particularly questionable.

It is useful to add a brief comment regarding space dimensions. These experiences with local sustainability indicators particularly aim to assess local rather than long-distance conditions or impacts on people and ecosystems. This is probably because the task of assessing local conditions is already very demanding and challenging and inhibits further efforts to expand them to include wider territorial contexts (although there are some efforts to harmonize and find comparable indicators mainly from the NSDIS, ECOXXI, Algarve system or ECI). Moreover, these projects are still at an early stage – most of them are very young and are struggling to be implemented – which depicts the lack of capacity to absorb regional, national or international issues through the indicators. There are other reasons, which will be discussed throughout this Chapter.

Coherence

A strong coherence of the indicator system would imply that the (official) roles defined for the indicators would be clearly linked to their (official and non-official) aims and their target groups, i.e. a set designed to improve communication with the general public would probably aim to bring the public to discussions and debates around the indicators, and therefore, the target-group would be the general public (local community). In opposition, a weak level of coherence would mean that some discrepancies would exist between their purposes, aims and target groups, in practice or

rhetoric. As mentioned in Chapter 4 and argued by Mineur (2007), it is important to design, present, frame and firmly establish sustainability indicators in accordance with the 'problem' they address, if they wish to be an 'effective instrument in governance'.

Regarding the roles of indicators in our case-studies, there is a multiplicity of distinct roles that sustainability indicators wish to play, from 'objective setting and comparison' to 'technical and managerial' (see Chapter 3). The most common roles are linked to the diagnosis of current local conditions and trends (all of the case-studies), to the need to inform planning and decision-making (Oeiras, Oporto, Mora, Palmela), to define targets and goals for local plans or strategies (Aveiro, Oeiras, Mora), and to monitor progress towards sustainable development policies (Redondo, Mindelo, Aveiro, Oporto, Oeiras and Palmela). Curiously, the 'public communication and participation' role is clearly misrepresented in these experiences. Most of the case-studies consider that one of the functions of the indicator systems is to inform the public, but perceive this role as a consequent procedural step to take. The absence of a more participatory function is notorious when indicators are not considered to serve as mechanisms for understanding people's values, needs and expectations, for raising awareness and encourage behavioural change or even for improving communication with the public or selected groups. Probably because of this, communication channels were weak points in all projects. In fact, there was almost no place for procedures to simplify the understanding of indicators or to present them in an easily understandable, visually attractive way to target audiences or even to present them at all to the public, as we will see. At the same time, it can be argued that the absence of a communication strategy is coherent with the mostly technical and managerial roles of the indicators analysed, with a strong focus on internal use for local governments. At least rhetorically, there seems to be a quite solid relationship between a more technical discourse on indicators, their objective setting and managerial roles and internal aims, and also their internal target groups, while the need to inform local citizens and other actors is considered as a mere procedural step to enforce transparency.

7.2.2. Assigning Overall Responsibility

Assigning overall responsibility is by large one of the most significant criteria in this research, since it particularly determines the capacity of sustainability indicators to become internalised in the routines of the relevant actors over time, and therefore, their capability to contribute to challenge governance practices for sustainable development. Table 7.2 summarizes the main conclusions for the case-studies regarding the dynamics of: a) *political commitment* of Mayors and political executive bodies, and b) *sensitivity to change* (sensitivity to political shifts), considering the operational (technical) capacity to undertake the work around the indicators.

Political commitment

This sub-criterion assumes that strong political commitment to the implementation of sustainability indicators is desirable and that it should be expressed through clear actions over a considerable time span. Indicators demand large resources and logistics (human and technical) to be continuously maintained and updated. This is why favourable and supportive political positions to indicators imply more than rhetorical (weak) support and must be accompanied by financial support. This line of thought would lead us to expect that bigger municipalities, with high population

levels and high budgets, would have the capacity to invest more on infrastructures to manage sustainability indicators. By contrast, smaller municipalities, struggling with several competencies, fewer human resources and lower budgets, would not consider sustainability indicators a priority. Surprisingly, judging from the findings of this research, this is not the case. There seems to be no connection between the development of sustainability indicators and the financial capacity or population dimension of a municipality. It is curious to observe contrasting political attitudes and actions towards the indicators in 'similar' small villages (such as Mora and Redondo) and in similar big municipalities (such as Oporto and Oeiras) or medium municipalities (Aveiro and Palmela). In addition, municipalities show quite different attitudes, regardless of the political colours, number of mandates of Mayors, or academic background of the elected politicians.

Table 7.2 - Assigning overall responsibility

	Political Commitment	*Sensitivity to change*
Redondo	**Very Weak.** Lack of commitment to the indicators, although important to LA21. Lack of awareness of the indicators, their role, potential uses or benefits.	**Very Weak.** It was never established, with no formal responsibilities assigned and no financial support.
Mindelo	**Moderate.** Local parish politicians assign responsibility for the indicators to the ENGO and do not assume any concrete responsibility for the indicators. At the local council level, there is no political incentive or support.	**Very Weak.** Very dependent on the capacity of the ENGO.
Aveiro	**Weak.** Commitment of the political executive body to the indicators and the respective ESD Strategy is low, with absence of actions, formal goals or political support.	**Very Weak.** No financial support or mechanisms are in place to enforce the indicators.
Oeiras	**Very Weak.** Poor support of the political executive body, with no awareness of or interest for the indicators.	**Very Weak.** Although with financial support, it depends on the willingness of public officers to apply to the indicators programme.
Oporto	**Strong**. Commited support to the indicators from the Mayor.	**Strong.** With high financial support, stability of the project team over the years and a solid infrastructure to manage the indicators.
Mora	**Very Strong**. Strong leadership and high commitment to the indicators and its overall project by the Mayor and the political executive body.	**Strong.** With clear responsibilities defined to manage the indicators inserted in a solid and certified Integrated Management System.
Palmela	**Very Strong.** High commitment by the Mayor, with strategic vision and awareness of the importance of the indicators.	**Strong.** With high financial support, stability of the project team over the years and a solid infrastructure to manage the indicators.

From the analysis of the case-studies, and considering the politicians' awareness of the indicators and their involvement in the development process, some observations can be disclosed. Politicians recognise the indicators as a technical issue that should be dealt with or is better dealt by public officers and experts. This technical and rational line of discourse is nevertheless not just characteristic of politicians, but dominates the general positions and feelings of public officers and experts alike. Particularly for politicians, indicators are generally perceived as monitoring instruments with technical specificities. This determines the way they misunderstand, or are not aware of, other potential roles for the indicators (excluding the very technical ones) and even 'forget' how helpful they can be for political decision-making. Some stated that "(…) this monitoring action is, indeed, a technical circumstance" (Interview 3). Others demonstrated a general lack of awareness of what indicators really are and what they (could) represent for the municipality (in Aveiro, Mindelo, Redondo). This can partly explain the poor interest of some politicians in finding

some time for the interviews (in Oeiras, Oporto, Palmela or Vila do Conde), since they believe such technical matters should be discussed with public officers.

On the other hand, when they did have time for an interview, some of them assumed positions of discredit and distrust of sustainability indicators and sustainable development challenges in general: “I don’t act according to whatever is in fashion. I don’t believe in global warming or whatever other crap Mr. Al Gore claims” (Interview 3). This raises the question: what room can sustainability indicators possibly have? However, some, whose level of awareness of sustainability issues and complexities was higher, recognised the need for indicators: “If you were to analyse the minutes of our meetings, you would confirm that environmental questions take 80% of our time. There is an effective concern (…) so, the indicator set would allow, in the end, to monitor these actions. And would also allow to direct our work in some way” (Interview 12).

Attention should be drawn to the general line of argument of several public officers regarding political reactions to the indicators. Their perception is that politicians fear the transparency that indicators may bring to policies and their outcomes, and the possibility of allowing the general public to have access to that information. They argue that when politicians use indicators, it is solely to mask reality instead of making it more clear and transparent: “At the moment, building indicators scares a lot of people. (…) By itself, an indicator set is contrary to what politicians want. Indicators are real, concrete and hardly allow for cover ups. The best thing isn’t to have numbers.” (Interview 16); “I think that indicators are a necessary tool for participation, for governance. Without this, it doesn’t allow making the administration more transparent, more objective, and so I see this in the interest of the local governance concept! In concept! In practice, it depends on the politicians, and I think that some are in favour and others not so much so, because they perceive this as a threat to the autonomy of their decision-making power and even their independence” (Interview 23). Those conclusions are reinforced by and match with the lack of definition of goals and targets attached to the indicators, and seem to apply to almost all of the case-studies (see the performance sub-criterion).

Another problem behind political mistrust on the indicators is the rivalry between local councils, particularly between nearby municipalities. This local rivalry or unhealthy competition (as we will see further on) prevents the building of more coherent and articulated local strategies on indicators and demonstrates a lack of enthusiasm to publicise and give visibility to indicators: “I don’t like to compare, for instance, when you see the GDP, or the Local Purchasing Power, studies that are carried out. Because I look at them and say ‘that is not true’ in a place that we know well, it’s not true that the municipality of (…) has a higher value than (…), or (…) higher than (…)… We know that that’s not true, but ok, it’s that type of data obtained God knows how…” (Interview 9).

Nevertheless, when political support was strong, the work around the indicators received higher visibility, credibility and legitimacy. In addition, in these cases (Mora, Oporto, Mindelo, Palmela), politicians were personally involved (although with varying levels of involvement) in the process of debating and defining the indicators. In Mora, for instance, both interviewed politicians clearly demonstrated their connection and knowledge of the work around the indicators and stressed how important they were for local decision-making.

A final interesting interpretation can be taken from a more detailed analysis of the most successful cases (from the point of view of the indicator institutionalisation at the local council and degree of

political commitment). In the case of Mora and Oporto, political commitment was enhanced and reinforced by the national and international recognition of their efforts (in the case of Mora with the certification process, and the 'credit' of being the only municipality in the country certified in three international norms in all its structure; and in the case of Oporto, with several international commentions and awards for their work on the quality of life indicators), providing higher visibility to their efforts. On the other hand, in the case of Palmela, the whole political and financial effort towards the strategic objective of improving internal management and efficiency with the indicators, received – and was not even aiming at it – no visibility outside the organization. The strong investment in an information structure in Palmela was focused on internal improvement goals for better planning and decision-making and was not looking for national or international recognition.

Sensitivity to change

The effects of the *sensitivity to change* criterion can be well observed in the case of Aveiro, when the party in power changed after the definition and first approval of the sustainability indicator set. The indicators and the strategy that sustained them were the result of the efforts of the Socialist Party that only at the end of its mandate was able to approve them. The Social Democrat Party that came to power in the subsequent elections and, although rhetorically supporting all of the previous work and efforts, did not consider the indicators as a priority. In the absence of procedures, financial support or other mechanisms to operationalize the set, the indicators were not implemented and coordination responsibilities were dismissed along with the indicators.

Along the research it became clear that three particular issues were impacting on the institutionalisation of sustainability indicators and their continuity over the years. These issues were determinant for the indicators' sensitivity to change, particularly to political change of executive bodies.

In the first place, processes developed externally - mainly by external experts - (such as in Aveiro, Mindelo, Redondo, Oeiras) and the ones developed by mixed teams of public officers of the local councils and experts (Mora, Oporto, Palmela) achieved different outcomes. Where coordination teams were essentially composed of local public officers with technical support from external experts, the results were extraordinarily better. This way of working allowed stable routines and procedures to collect and analyse information and a higher capability to internalise the process. Some public officers considered this to be one of the most relevant elements for the indicators effective operationalization: it is crucial that "people here do it, and gain routines and ways of doing that everyday, regardless of any stronger external support they may have. This way, the project belongs to them, they keep doing it, and with more or less collaborations, it goes on as they want" (Interview 27). Others consider that "it is already a routine, nobody can work without the indicators any more (…) It was a huge change in routines that improved so much people's work and that was so well internalised that people already think that nothing has changed" (Interview 20). This way of working was considered as a 'good practice' to develop local sustainability indicators by many interviewees, and as one of the reasons for failure when it was not implemented.

In the second place, processes where human resources of the local council were allocated to work specifically with the indicators (Oporto, Palmela and Mora) worked better than processes where indicators were considered as just one more task of someone or some department (Redondo, Aveiro, Mindelo and Oeiras). Of course, the assignment of human resources to work with the

indicators is dependent on other circumstances and criteria, such as financial and political support, but when a stable working team was given conditions to work, they were able to overcome other operational and technical obstacles that indicators imply and created conditions to enforce a stronger monitoring culture in the local council: “We are fortunate that the same working team has remained this long and has continued to be available. But this implies a huge effort, dedication, especially because we are from geography and sociology and we don’t have knowledge of several areas, like the environment, and that means a lot of effort to us” (Interview 27). This organisational difference also has implications on another criterion such as the feeling of ownership of the actors involved.

Finally, a third factor was the allocation of the work with indicators to departments that have a transversal position in the local council organizational chart (Oporto, Palmela and Mora) *versus* processes coordinated by a sectoral department, usually within the environmental area (Redondo, Aveiro, Mindelo and Oeiras). The example of Palmela is crucial to understand the importance of this criterion: a new Unit was created to support a transversal information system with high demands for integration and coordination (this is further explored in the sectoral coordination criterion).

To sum up, in Palmela, Mora and Oporto, governmental commitment to the conception and implementation of the indicators must be recognised, together with coherent financial support strategies which have been maintained over time. In Redondo, Aveiro and Oeiras, rhetoric has been stronger than action, where no expressed commitment or real engagement to the indicators exists and where they are not perceived as an important political issue. The level of commitment also ends up reflecting the (non)assignment of clear responsibilities to specific persons or departments to coordinate the project, which determines the indicator set sensitivity to political shifts over time. This is clearly visible in Table 7.2, where higher levels of political commitment correspond to stronger consolidation efforts. Mindelo stays in the middle, where local parish support has not been enough to generate the necessary conditions to implement the indicators. Nevertheless, the specific characteristics of this case must be taken into consideration.

7.2.3. Government Coordination

As it was mentioned in other Chapters, the level of *government coordination* is decisive to understand how knowledge is transferred around and between government units and within them, and how sustainability indicators can impact or be constrained by this coordination effect. Within the scope of this criterion, three different aspects must be focused: (a) *sectoral or horizontal coordination*; (b) *regional or vertical coordination*; (c) the existence of *training* programmes for public officers and elected politicians regarding sustainable development issues and particularly sustainability indicators. Table 7.3 summarizes the main conclusions taken from each case-study.

Sectoral coordination

Sectoral coordination is mainly related to the level of articulation of sectoral policies and actions, and the level of communication and working routines between departments and services in the local council. When trying to understand and assess how this can influence the gathering of transversal knowledge about local sustainability and vice-versa, this research came to interesting

conclusions. In fact, the dynamics generated between the development of the indicators and internal working routines of local councils were one of the most challenging relations to investigate. Did the development of the indicators show the conflicts between different local goals and policies? Did they help to reinforce internal capacity-building for sustainable development? Clear 'yes' or 'no' answers are almost possible for the second question, while it is more difficult to accurately answer the first one.

Considering the transversal and multisectoral nature of sustainable development goals and actions, it would be expected that internal coordination would be decisive for the implementation of sustainability indicators and that the development of these indicators would necessarily steer it. Answers to the key issue of sensitivity to change, raised by the previous criterion, are strongly related to this internal coordination aspect: was the 'catalyst' department, in charge of enforcing the indicators, strategically located in a transversal position and close to higher decision-making levels? In Mora, Palmela and Oporto, the coordination team was (and still is) in a strategic organizational position, directly dependent on the Mayor. In these cases, specific institutional mechanisms that steered integration have been in place throughout the development of the indicators, although in different degrees. In this way, they reflect the most successful approaches that helped to consolidate the indicator system. In addition, some new procedures, routines and mechanisms have ensured the coordination team effective feedback from different departments, not only regarding the provision of data for the indicators, but also for the debate about trends, methodological problems, etc.

Table 7.3 – Government coordination

	Sectoral (internal) Coordination	*Regional Coordination*	*Training*
Redondo	**Very Weak**. Lack of attempts to improve sectoral integration, through the indicators or even the LA21 process.	**Very Weak**. No attempts to coordinate actions with other municipalities (even with Arraiolos), regional or national bodies, apart from the link with the Regional Association (RAMED).	**Weak**. No SD training programmes and low level of awareness.
Mindelo	**Strong**. High for the local parish's actions and very low regarding the local council sphere.	**Very Weak**. Few coordination mechanisms with other local parishes, the local council, other municipalities, regional or national bodies.	**Moderate**. No SD training programmes, but good level of awareness and education.
Aveiro	**Weak**. Initial efforts when designing the indicators were totally dismissed afterwards.	**Very Weak.** Poor coordination mechanisms with other municipalities, regional or national bodies for the indicators and the SD strategy.	**Moderate**. No SD training programmes, but good level of awareness and education.
Oeiras	**Moderate**. Improved while the project was in place but lost since it stopped.	**Moderate**. Some regional integration and communication within ECOXXI municipalities and entities.	**Very Strong**. ECOXXI training and postgraduate course on SD for officers.
Oporto	**Moderate**. Enforced with the indicators project but still challenging in a big municipality.	**Moderate**. Poor coordination mechanisms with other municipalities, regional or national bodies (although some attempts were carried out) but strong communication with European governmental entities.	**Strong**. High level of awareness and intensive self-learning initiatives for the project.
Mora	**Very Strong**. Major improvements done through the IMS and the indicators. A recognised best practice.	**Weak**. Few coordination mechanisms with other municipalities, regional or national bodies for the indicators and the IMS.	**Moderate**. No SD training programmes, but many other training programmes and good level of awareness.
Palmela	**Very Strong**. The indicators had a huge role in the consolidation of sectoral integration.	**Moderate**. Poor coordination mechanisms with other municipalities, regional or national bodies (although some attempts were carried out).	**Strong**. High level of awareness and intensive self-learning initiatives for the project.

In the case of Mora, the IMS process (and not specifically the indicators) enabled departments to move from a narrow sectoral perspective to a broader and integrative overall strategy and from a sectoral way of working to a more harmonized one. The consolidation of the indicator system contributed to conciliate even more different goals and policies and to enforce routines of sectoral

communication and data gathering and management to be compared and analysed systematically by all of the heads of departments and politicians. In the case of Palmela, on the other hand, the way the information infrastructure has helped to reinforce local capacity-building for sustainable development is quite clear. Public officers affirm that more than the indicator system, the great step forward was the establishment of a new Unit, a new organic structure that supports a demanding information structure that must be at all times in contact with every department and service of the local council. Departments were not only involved in the discussion and design of the indicators since the beginning, but also have now a stronger working relationship with the Unit responsible for the indicators. This was and is one of the biggest assets of that project, although a further step could have been made in order to assure an effective harmonisation of goals and sectoral policies. In the case of Oporto, the involvement of different sectors in the project is considered very relevant. The coordination team works as an interesting link with other departments. The Oporto's project also raised awareness of the need for different sectoral indicator systems and for systematic data collection and analysis in different departments, as the Quality of Life's indicators did not intend to be a mega-system. Since then, the coordination team has been promoting, collaborating and interfering in several other sectoral plans. Nevertheless, taking the local council as a whole, this is a smaller step for better internal coordination, in the context of a big entity.

A common problem, though, in both the cases of Palmela and Oporto is that there are still no procedures that assure effective internal communication regarding the indicator systems as a whole. There are no feedback mechanisms or internal reports about the indicators' evolution, from the coordination teams. As such, the indicators 'belong' to and remain within the coordination teams and no information about the whole system is released internally.

Several public officers from other case-studies also argued for the importance of transversal working routines in the local council: "The working pressure is enormous, and the system doesn't work as it is. If it's a tree chart, the way of communication is like that. So, there are no transversal communication mechanisms between the services. There are indeed specific projects that oblige to do so, but they are informal processes" (Interview 23). This seems to be a general feeling, as many interviewees reinforced this idea, as illustrated by the following expressions: "the administrative and organisational division of the municipality auto-blocks itself" (Interview 2); "The internal way of working [of local councils] is very 'cloudy'. (…) They have Mayors for a long time, a heavy structure, they are not dynamic, and not worried about finding indicators" (Interview 11). In those contexts, it is difficult for indicators to become less sensitive to change: "There are funds and interest to develop them, but then, because they are not articulated, they are not incorporated into political strategies, [and] they all end up in the drawer" (Interview 16). As such, many interviewees considered as major obstacles to sustainable development the complex way of working of local authorities, the malfunctioning and lack of communication between services, departments and public officers, the consequent lack of articulation and integration of sectoral actions and policies and the lack of transparency and will to provide sectoral data within departments. In some cases, the experience around sustainability indicators has proven to be an interesting mechanism to overcome these problems or, at least, to raise awareness of the need and urgency to correct them (such as in Palmela, Oporto or Mora). In other cases (Aveiro, Redondo and Mindelo), these intersectoral malfunctioning was detected in the work of the indicators – in Aveiro in the operationalization phase and in Redondo and Mindelo in the definition phase. Some examples illustrate these obstacles:

In Aveiro, the environment department, responsible for the sustainability indicators, did not even know that Aveiro was participating in the Urban Audit project, as this was considered a mere procedural request for a statistical report prepared by another department. The Urban Audit Coordinator in Portugal from the National Statistic Institute stressed that in Aveiro the project was not considered important and that poor organisation and coordination and some changes of interlocutors made the gathering of information very difficult. Furthermore, although there were efforts to coordinate some sectoral actions, when the final sustainable development strategy and indicators were defined, they were rendered 'not so important' by the new political executive body and were replaced by rhetorical discourses.

As for Redondo, there was no transversal work in the local council and not even an attempt to involve different departments in the indicators definition or in the general LA21 process. There was only one public officer in charge of the whole LA21 process, who assumed other functions as soon as the action plan was approved. Although it is a small local council, the LA21 process did not contribute to change the compartmentalized way of working of departments (and the indicators even less), since all LA21 strengths and energies where targeting external connections with local actors and citizens.

In the case of Mindelo, and although the local ENGO had a major coordination role in the LA21 process and the indicators, the local parish council had nonetheless experienced significant changes in the articulation of their actions with environmental concerns, resulting both in efforts to integrate their work towards sustainable development with the ENGO's activities and in the signature of the Aalborg Charter's commitments. When analysing the role of the local council of Vila do Conde, several problems were pointed out, besides the lack of interest for the project: the disorganised way of working of departments and their non-involvement and non-interest for the provision of local data.

Another key example reports the availability of several sectoral data that is not collected or analysed or that is collected to answer requests from several different institutions (such as the National Statistics Institute, Regional Public departments, etc.) for several different purposes, and that is not used internally nor is systematically integrated in one system.

On the whole, the case-study of Oeiras had mix outcomes. Public officers recognised that the participation in the ECOXXI project helped them, in the environment department, to enforce communication and coordination with other departments, to have a comprehensive vision of other local projects and to integrate several parallel technical initiatives. As they pointed out, this was, in fact, one of the major positive effects of the project. Nevertheless, this exceptional advantage ended as soon as the participation in the programme stopped. However, energies are now directed to the development of a specific sustainability indicator system with a strong emphasis on multi-sectoral work in order to maximise the so far sporadic and project-specific transversal coordination.

Regional coordination

The aim was to overview the level of coordination of local councils with other municipalities as well as with higher levels of government, at regional, national and international levels in order to be able to assess the capability to deal with the transboundary challenges of sustainability policies and

indicators. Throughout the research it became clear that regional coordination is still a problematic issue. Except in the case of Oeiras (for particular reasons) and at some point in the case of Oporto (which will be explained further on), no other case-study was involved in a joint effort, together with other municipalities or higher government structures. However, there were some cases where efforts to learn from other regional (such as the Algarve experience), national (such as the National SDIS) or European projects (such as the Urban Audit or the ECI) were carried out, but this will be analysed later on when discussing the learning efforts and connections with other networks or experiences. Now, we will focus on the establishment of mutual communication channels, on formal or informal coordinated practices and on the exchange of experiences between *governmental entities* at different territorial levels.

In Oeiras, several procedures were implemented that stimulated the creation of some communication channels with other municipalities, as a consequence of the specificities of the ECOXXI project. This project aims to ensure an effective institutional coordination and to involve local councils (that wish to apply) and several governmental bodies at the regional and national level in the creation of local sustainability indicators. The project provided Oeiras with essential know-how, not only regarding methodological issues and technical support for the indicators' development and update, but also regarding procedural requirements that enable a more effective relationship between different entities. Thus, a transversal indicator system with a supra-municipal, regional, national or even international profile could be created. This knowledge was considered vital and transferred to the work with the SDISO.

Regarding intermunicipal work, some difficult issues were raised by most of the interviewed public officers: lack of interest for sustainability indicators by the majority of the Portuguese municipalities; a cultural deficit in evaluation procedures; rivalry among local councils; and lack of political commitment to support intermunicipal projects. We will now focus on specific cases. In Oporto, for example, public officers felt the need to exchange information and knowledge with other Portuguese cities involved in the Urban Audit project, but there was no corresponding enthusiasm from those municipalities at the time, and no feedback was obtained or discussions fostered. In Redondo, even when the Regional Association of Municipalities of the Évora District (RAMED) played a decisive role in providing financial support to implement the LA21 in Redondo and Arraiolos, those two municipalities worked in complete isolation from one another. The RAMED plays an important role in facilitating procedural aspects concerning the allocation of European funds to local projects, such as LA21, training programmes, etc. However, it seems to stop its capacity to enforce coordination of local actions for sustainability there. In addition, in the same region, the efforts of Mora to encourage other municipalities to implement management systems were unsuccessful and no relationships were established with any other governmental entity in the region. Only because of the certification process (carried out by the company APCER), Mora had the opportunity to exchange and debate experiences with other local councils, regarding the implementation of management systems in public services. In Aveiro, besides some interesting intermunicipal partnerships for certain environmental issues (such as the ones involving the Ria de Aveiro), intermunicipal partnerships were disregarded in the local sustainable strategy and in the work with indicators.

Regarding regional coordination, on the other hand, the coordination team in Oporto, aware of the need to combine efforts in the metropolitan region of Oporto, tried to conciliate different directions to establish a common indicator system for the region, but it had no political support and was

unsuccessful. The lack of coordinated actions, strategies and policies in the Metropolitan Region of Oporto was also mentioned in Mindelo as a major disadvantage for regional sustainable development, where rivalry among municipalities blocks any effort to implement a common indicator system, for instance. The same regional unsuccessful efforts were made by public officers in Palmela, who concluded that sustainability indicators are not considered strategic issues for now and that political support for regional initiatives is quite difficult to obtain.

The lack of national platforms that could promote the development of local sustainability indicators and support debate about the different local experiences was mentioned by almost all of the interviewed public officers as an important hindrance to the steering of new practices or to a stronger support of (the few) existing ones. Critiques were also extended to the roles and malfunctioning in general of Regional Coordination Agencies and to the non-existence of administrative regions that could enforce this coordination level for sustainability related issues.

It is important to mention that the enthusiastic participation of Oporto in the European project Urban Audit led them to establish several contacts with other projects and governmental entities around Europe, to share and discuss experiences in international forums and to create learning opportunities that were not possible in the country (such as the *Eurocities* international meeting in Oporto, supported by the local council, where the indicators project was considered a great success). In opposition to the difficulties faced in national territory to develop these experiences, the impact and interest raised internationally was remarkable.

Training

A high level of education and professional expertise on sustainable development issues of public officers and elected politicians in local authorities supposedly leads to higher levels of commitment to sustainable principles. Training is considered highly important to strengthen the capability to manage sustainability indicators and their related activities. As such, the research aimed to assess the existence (or not) of training programmes for public officers and politicians regarding sustainable development issues in general, or sustainability indicators in particular.

In general, training programmes in local councils are directed to procedural and legal areas, where sustainable development issues are not particularly relevant. The challenge of implementing sustainability indicators in the analysed municipalities did not change this perspective much. The exception is Oeiras, where some training on sustainability indicators was provided to public officers, organized by ABAE and the ECOXXI project. Besides an annual training session, there is regular contact between ABAE and local public officers, which enables a significant interchange of knowledge and methodological support to the implementation of sustainability indicators in specific local contexts. Nevertheless, an innovative postgraduate course on sustainable development issues was developed and offered to public officers of the different departments of the Oeiras local council. Between May 2008 and September 2009, these public officers have received an important theoretical and practical training in their workplace to enforce the operationalization of the LA21 action plan and the consolidation of the SDISO. This is a good practice that must be recognised: an effort that raised awareness of sustainable development concerns, steered internal coordination and facilitated the establishment of solid communication channels in the local authority.

In Palmela and Oporto, there were no specific training sessions, but there was a high level of awareness and education among the public officers involved. As such, the coordination teams

made huge learning efforts to review the relevant bibliography and gather knowledge about other national and international experiences with local sustainability indicators. Both teams were composed of several public officers specialised in areas such as geography and sociology. In Palmela, the team also included public officers specialised in GIS, architecture and information and communication technologies. This technical capacity also had a positive impact on the transference of knowledge to other services and departments in the council.

In Redondo, the level of SD education was very low in general, and expert support was considered crucial for the implementation of LA21 and the indicators. When asked about the most important training issues for civil servants in Redondo's Local Council, public officers and politicians emphasised the role of the RAMED in providing adequate training, though mainly in basic areas (such as learning English, legal updates, etc.). They consider that Redondo represents "a reliable picture of the great majority of the local councils in the country that do not escape this rule: local councils have too much undifferentiated staff and less qualified personnel" (Interview 6). This justifies the content of the training courses and the absence of sustainable development issues. Mora, although under the same Regional Association, seems to be in a different position. Its training needs do not correspond to the ones of the other municipalities. Training was and is one of the most central aspects of implementing the IMS and targeted not only civil servants, but also the political executive body and even the Mayor received specific training. The emphasis on training and on several internal and external audits had a great impact on formal and informal procedures that strengthen internal communication and coordination. This has moved Mora far away from the global regional (and national) level of basic training needs and indirectly raised the level of education and awareness of several challenges for sustainable development policies.

Finally, the role that expert knowledge assumes in this context is fundamental. Experts are unanimously considered as indispensable supporters or providers of knowledge for such projects, given the general training gaps for sustainability issues in local councils, the general lack of national guidelines and the fact that indicators are broadly and generally considered as a specific technical issue with several methodological challenges.

7.2.4. Stakeholders' Involvement

Three factors were chosen to evaluate the *stakeholders' involvement* in the process of defining and operating the indicators: (a) *multi-stakeholder involvement*; (b) *participation mechanisms*; (c) the *feeling of ownership* of the actors involved. Table 7.4 synthesises the main findings.

Multi-stakeholder involvement

Considering the numerous experiences of sustainability indicators at the local level analysed in Chapter 3 and 4, where the involvement of multiple actors was strongly emphasised, this sub-criterion implies that the more different stakeholders participate in the indicators' development, the better. Involving diverse actors in the choice of indicators can help to incorporate different perspectives and context-specific meanings of sustainability into the set. It can also help to enforce coordination mechanisms that enable the operationalization of the indicators among public and non-public actors, and to improve communication channels of public authorities and consequently steer governance arrangements for sustainable development. Furthermore, the more stakeholders

involved, the higher the probability that the indicators will have multiple uses and users (Hezri and Dovers 2006). Therefore, it is particularly important to understand and compare the extent to which different actors were involved in these local projects.

Table 7.4 – Stakeholders' involvement

	Multi-stakeholder	*Participation Mechanisms*	*Feeling of Ownership*
Redondo	**Weak**. Broad range of actors in the LA21 process but a very expert-based work on the indicators, with almost no actors involved apart from experts.	**Weak**. Broad participation mechanisms for the LA21 process but few efforts to develop a participative debate about the indicators (only one discussion inside the SC21).	**Very Weak**. A feeling of ownership was never generated because the process was carried out by only one expert. Responsibilities for the indicators were unclear and no one felt committed enough to continue the project.
Mindelo	**Weak**. Broad range of actors in the LA21 process but the work on the indicators was very expert-based, with almost no actors involved apart from experts and the coordination group.	**Weak**. Broad participation mechanisms for the LA21 process but few efforts to develop a participative debate about the indicators.	**Weak**. The definition of indicators was too much based on external experts. Responsibilities for the indicators were unclear and no one felt committed enough to continue the project.
Aveiro	**Weak**. A very expert-based work on the indicators at first, and later with the involvement of different public officers from the local council.	**Weak**. Some participation mechanisms for the LEP process but only internal debate about the indicators with local officers.	**Weak**. The environment division, responsible for the indicators, is not committed to them, because they lack political and financial support.
Oeiras	**Weak**. Indicators were not defined locally but provided externally by the ECOXXI project.	**Weak**. Indicators were not defined locally but provided externally by the ECOXXI project.	**Strong**. Environment officers's commitment determined the participation in the ECOXXI project.
Oporto	**Weak**. Internal work on the indicators with the involvement of experts and different public officers from the local council.	**Weak**. Mainly internal and traditional governmental mechanisms, without open debates outside the local council.	**Very Strong**. Very positive feeling of ownership by the coordination team.
Mora	**Weak**. Internal work on the indicators with the involvement of experts and different public officers from the local council.	**Weak**. Mainly internal and traditional governmental mechanisms, without open debates outside the local council.	**Very Strong**. Very positive feeling of ownership by the coordination team.
Palmela	**Weak**. A very internal work on the indicators with the involvement of experts and different public officers from the local council.	**Weak**. Mainly internal and traditional governmental mechanisms, without open debates outside the local council.	**Very Strong**. Very positive feeling of ownership by the coordination team.

From all of the case-studies analysed, it is fair to argue that some stakeholder groups were always absent when the indicators were defined. Local citizens and other local actors outside the local council sphere were never present, such as local companies, non-governmental organizations, collective associations, etc. Clearly for politicians, but also for public officers, the involvement of the public was not an issue and there were many reasons for neglecting the participation of the general public, most of them clearly associated with the technical and rational discourse underlying the indicators. Let us take a closer look at them.

According to the interviews, there was an almost unanimous belief that the public is not specially interested in such issues, and if they were to invite citizens to participate in the discussion about indicators selection, they would not show up. The example of many LA21 open discussions with few participants is used by many interviewees to underline this argument, explaining that there would be even fewer people attending a debate on such a topic: "(…) we believe that it would be very difficult to mobilize development agents, and even more to mobilize the general public to discuss separately which indicator system to apply" (Interview 10). This argument is also used in interviews 2, 6, 11, 23, 30, and so on.

Secondly, a much cited justification was that people do not have the adequate knowledge to add positive insights for the indicators. They are not considered to hold accredited knowledge, "given the complexity and multidisciplinary of the knowledge at stake (…) [as this] is not an easy subject, even in academic circles" (Interview 10); "people, in general, do not have much idea of what an

indicator is and this is where the technical work plays a role to translate what people want (…) I think that indicators are much more on the technical side than on the public participation side." (Interview11). According to the public officers' position, which is not distant from the politicians' viewpoints, besides the willingness, the general public would not have the capability or ability to contribute to such a technical matter. This is also sustained by another curious factor: politicians feel that they already know their territory very well and, for that reason, rely on their individual knowledge and believe they know enough for good decision-making. Politicians in Redondo, Mindelo, Mora and Aveiro show this typical trust in their own knowledge, supported by 'internal' specialized knowledge. A good example is provided by one politician that stated that economic and unemployment problems were the major threats to local sustainable development and therefore he affirmed to know their local unemployment rate very well. However, this rate was (considerably) incorrect, according to official statistics and even according to the rate officially reported in the LA21 diagnosis. More importantly, there are peremptory affirmations of discredit and a strong discourse of distrust of the official statistics produced by the National Statistics Institute (INE). Even if this Institute can play a particularly important role as a key (technical) actor for the local process, it is completely absent in almost all of the projects. Judging from the information gathered for this research (and a former close collaboration of the researcher with the INE), it can be argued that the INE also doubts the way statistical information is produced by local councils in general. However, there was an exception, namely a close and fruitful collaboration between INE and the indicators' team of Oporto, which conferred more credibility and legitimacy to the indicators and that contributed to understand and minimise methodological challenges created by the indicators (Interviews 27, 28, 29).

The apprehension of politicians about the transparency that indicators can bring to local policies is seen as a third reason for not involving the general public or other non-public local actors. Therefore, they seem to prefer internal and managerial decision processes, not open to the public. The indicators can, in the first place, enable the evaluation of local policies outcomes or facilitate the general understating of trends and territorial dynamics, which do not depend entirely on local actions, and therefore may debilitate the political image. Additionally, if the public would be involved in such a choice, their capacity to influence agenda-setting and control the indicators implementation could be boosted. Much of the resistance to a more participatory approach towards the indicators' development is the reflex of general political reservations towards open decisions and the role of public participation in politics (Interviews 2, 11, 16).

Finally, a last argument reflects the (conscious or not) misunderstanding of participation as a mere information procedure. When citizens are considered target groups (as it is the case in almost all case-studies), it is implicit that they are to be informed, but not to be involved. Indicators are considered exclusively as an information tool for the public. The role of citizens or other local stakeholders concerning indicators is a passive one. They represent target groups which are to be informed through the indicators (and for the most part only the ones compulsory by law), with no other kind of power or influence over the process. When this is the case, public participation equals public opinion, which is gathered through specific channels or generally through the traditional procedures of representative democracy.

By contrast, the role of experts is considered vital to obtain technical capacity and enhance the credibility of the project, as they are considered to hold the most legitimate type of knowledge about the indicators. As a result, they are the most common stakeholders in the case-studies,

without exceptions. This technical expertise comes mainly from the universities (in the cases of Oporto, Palmela, Aveiro, Mindelo and Redondo) or private consultants (Mora and Redondo). Experiences are, therefore, too centred on expert knowledge. Efficiency, rather than the enhancement of democratic procedures, is clearly the leading motto for the indicator's role in these local contexts, which fits the mentioned technical perception of indicators.

Only in Oporto, there was a short involvement of other external organisations in the choice of specific indicators, but they were not included in broad or multilateral debates. Their participation was sporadic and within the scope of sectoral discussions. In Oporto, Palmela and Mora, where the indicators were being monitored, these external organisations are basically considered as information providers. If it is true that indicators have improved procedures to collect disperse local information among many institutions, it is also true that their role was not further challenged so far.

Regarding the participation of politicians in the choice of the indicators, it was only possible to observe their strong involvement in the case of Mora and their 'softer' participation in the case of Oporto and Palmela.

Participation mechanisms

The participation mechanisms are related to the above criterion and intend to assess the mechanisms implemented that are supposed to attract different actors to the process. From what has been said, the conclusions are almost straightforward: participation mechanisms involving external actors were minimal; they were reduced to internal procedures to debate the indicators among experts and public officers from the local councils, reflecting a traditional governmental approach, very distant from the concept of governance.

When indicators were inserted in participatory processes such as LA21 or LEP, they somewhat reflected concerns, themes and actions debated and decided by citizens, local entrepreneurs, local NGOs, etc., in round-tables, forums, workshops or thematic commissions. Nevertheless, even in those cases, indicators were not considered to be an issue of debate and they were generally presented as a final proposal (interview 1, 2, 6, 10, 12, 13).

We will now focus on the participation of experts. A close working relationship between experts and the teams responsible for the indicators (mainly in Oporto, Palmela, Mora) demonstrated to be more valuable than subcontracting an external company or team to develop the indicators. It has proved to provide the local council with a stronger autonomy and more technical capacity to handle the indicators internally. Consequently, it has generated a stronger feeling of ownership by the coordination group. Therefore, it was acknowledged not only as a determinant aspect for the success of the projects, but also as a good practice to be enforced when possible in other related areas. Where the relationships between experts and the local teams were mostly independent and separated, the expert involvement did not generate mechanisms, routines and knowledge that fostered the internalisation of the process and the resulting indicators were fragile and difficult to implement (Aveiro, Redondo and Mindelo). Given the predominant rational discourse around the indicators, the aforementioned involvement of experts and the type of working relationships determined the extent to which the indicators can be institutionalised, not excluding all the other contextual factors, of course.

Since much of the data of the project of Oporto was (and is) in the hands of external organisations – from the private sector to non-public organisations or even from the public domain –, necessary (informal) 'partnerships' were established between the indicators team and more than 25 different external entities (the so-called 'Institutional Network of Information Suppliers)'. The creation of several informal protocols enabled the collection, organisation and registration of data in a systematic way, even though they aimed to provide information to the local system unilaterally and were not exactly a participation procedure for a transversal debate about the indicators. This is an interesting and new mechanism at work that has ensured better coordination between diverse actors, at least in exchanging information. Even if in a limited way, it also allows for some debate about methodological improvements or changes in the indicators. In Palmela and Mora, this link with external information suppliers also emerged with the operationalization of the indicators. When indicators were not followed (Mindelo, Redondo, Aveiro) this type of relationship did not develop.

From the analysis of who participated in the indicators process, and how, an obvious question emerges: should we rephrase the question of whether indicators challenge local *governance* practices for sustainable development to whether indicators change local *government* practices? We will discuss this point in the conclusion, but for now the question emerges.

Feeling of ownership

It is especially important to understand how the degree of trust among the actors involved in the process and how the feeling of ownership of the indicators could influence their design as well as their operationalization in the medium- and long-term. As Mineur (2007: p. 68) points out: "the feeling of ownership can create a willingness to care about the issue - I own this and therefore I care about it" and, as such, generate opportunities to transform the indicators in a matter of importance for the local context, in which reflects a relevant endeavour towards the understanding and monitoring of local sustainable development.

However, the analysis of this sub-criterion is not as broad as initially thought, because the degree of involvement of different actors was quite limited. Of course, the narrow range of actors has implications in the feeling of ownership. It is easier to define who 'owns' the responsibility for the indicators when there are not that many and different stakeholders involved, when indicators are designed internally within local organisations behind closed doors, and when there is less 'conflict' among agendas, goals and intentions.

We have seen in the section about *sensitivity to change* how the influence of assigning responsibility for the indicators to a stable team was crucial to secure and enhance projects. This was the case in Palmela, Oporto and Mora, where the feeling of ownership by the coordination teams and the way they were committed to the indicators determined their success. Nevertheless, it should not be forgotten that this was also accompanied by financial support and a formal political recognition of the work around the indicators. So, these findings are an example of how the feeling of ownership and a stable team, which has financial support, can favour the implementation of indicators at the local level. The indicators' teams in these 3 cases had total autonomy and power to define and choose the more suitable indicators, as well as to supervise all the actions, problems and challenges of their daily implementation. In Mora, for instance, the support of politicians made the team feel responsible for the indicators, and, in the end, for the implementation and monitoring of the whole management system as well. The dedication of this working group was a key factor for

the success of the IMS within the organisation. Furthermore, in Oporto, the feeling of ownership by the project team was so strong that, with more or less external technical support, they managed to establish the set internally through daily routines and tasks. As the core members of the team remained the same through time, it was possible to maintain involvement and enthusiasm for the project. Finally, in Palmela, all the staff involved in the work with indicators was very much aware of their responsibility and of its importance. They were very perseverant and could face many problems and obstacles (proclaimed by many local public officers as blocking any possible initiatives to build and update local indicators) with innovative solutions, with simple, original, and sometimes costly procedures to gather data.

Those cases can be considered to be the extreme opposite of the cases of Redondo and Mindelo, where it was not possible to identify who was responsible for the indicators. Accountability was lost somewhere along the involved actors, the LA21 structures or within the chain of many responsibilities for the implementation of the LA21 actions. No one felt responsible for the indicators. In Aveiro, the public officers of the Environment Division did not have a strong feeling of ownership, although responsibility was attributed to that Division and formally expressed in the Environment and Sustainable Development Plan. They felt they had not enough human and financial resources and that the lack of political support blocked any attempts to proceed with such a technically difficult challenge.

Finally, in such a specific case like the one of Oeiras, many findings are complex; we considered only the local influence and the local dynamics of the project developed within a national perspective. It is fair to argue that Oeiras' participation in the ECOXXI is only determined by the environmental public officers' motivation and by their recognition of the benefits of congregating local information from different departments into one single system and to compare it with other municipalities. It was because of this commitment that the project went on for 3 years and also contributed to build a specific sustainability indicator system for Oeiras. The level of awareness of these matters and the dedication of some local public officers had a tremendous impact on local endeavours towards sustainability in Oeiras.

7.2.5. Link with Local Plans or Strategies

Our aim is to understand how indicators integrate local *plans or strategies* and, as such, to assess: (a) the *performance* of indicators - the way they relate to certain goals or targets of different plans or strategies at the local and regional levels; (b) the *funding* of indicators - their capacity to be sustained over time. Table 7.5 sums up the main research outcomes.

Performance of indicators

Under this performance aspect is the assumption that the greater the link of the indicator system with several local (and with regional and national if possible) strategies and their targets, the better for indicators' comprehensiveness and integration.

Considering the technical discourse underlying the majority of the arguments towards the indicators' development in the case-studies, it would be expected that this performance criterion would be highly valued in order to maximize the efficiency of local actions towards sustainable

development. As such, there were more expectations for the research to find the most appropriate criteria to choose a 'good' indicator under the main goal of minimising methodological constraints and provide valid information rather than to find criteria which values social outcomes. As it was reviewed in Chapter 3, according to this expert-driven perspective, the most used criteria are based on: (1) the availability of data at reasonable costs, (2) the relative facility of collecting data, (3) scientific validity and reliability, (4) simplicity and ease of understanding, (5) a limited number of indicators, (6) the possibility of relating them to other indicators, (7) transparency and accountability and/or (8) relevance to policies.

At the same time, when analysing the role of indicators in local governance contexts, criteria related to the social outcomes of the indicators' implementation were seen as crucial. With the intention to potentiate the social uses and effects of the indicators, other criteria are also considered important, such as: (1) participation and involvement of different local actors and the public in the choice of the indicators, (2) meaning and historical weight of data, (3) importance of local knowledge and/or (4) capacity to institutionalize indicators, albeit with flexibility and adaptability to change over time.

Table 7.5 – Link with local plans or strategies

	Performance	*Funding*
Redondo	**Moderate**. Very good link with the LA21 Action Plan, but failed to be integrated with other local or regional plans. No specific goals or trends were attached to the indicators.	**Very Weak**. No interest to allocate resources to operationalise the indicator set.
Mindelo	**Moderate**. Very good link with the LA21 Action Plan, with concrete targets attached to the indicators. Failed to be integrated with other local or regional plans.	**Very Weak**. No allocation of resources for the indicators by any stakeholder.
Aveiro	**Moderate**. Very good link with the ESD strategy, although not assuming any targets. Failed to be integrated with other local or regional plans.	**Very Weak**. No interest to allocate resources to operationalise the indicator set.
Oeiras	**Moderate**. Indicators are attached to concrete targets and enable the comparison between municipalities. Failed to be integrated with other local or regional plans.	**Strong**. Some resources allocated to apply to the ECOXXI project over 3 years.
Oporto	**Moderate**. Indicators represent an effort to be linked with several local strategies, although without targets or trends. Failed to be integrated with other municipal strategies within the region.	**Very Strong**. Considerable and stable allocation of resources to the indicators through the LC budget.
Mora	**Strong**. Indicators are very performance-based and represent an effort to be linked with several local strategies, assuming targets or trends. Failed to be integrated with other municipal strategies within the region.	**Very Strong**. Considerable and stable allocation of resources to the indicators through the LC budget.
Palmela	**Moderate**. Indicators represent an effort to be linked with several local strategies, although without targets or trends. Failed to be integrated with other municipal strategies within the region.	**Very Strong**. Considerable and stable allocation of resources to the indicators through the LC budget.

In fact, the criteria that were used to choose the indicators in the case-studies are predominantly based on the first type of technical aspects. Curiously, the only common criterion to all of the projects is, the possibility to compare indicators with legal criteria, local targets or other indicators (namely the ones established by the National Sustainable Development Indicators System or by the European Common Indicators). Other mentioned factors were: local relevance and connection to local actions, availability of data, reliability and scientific validity of the indicators and capacity to be easily determined and interpreted. Criteria such as: possibility of aggregation (only in Oeiras), limited number of indicators (only in Mindelo and Oeiras) or even implementation costs (only

assumed in Redondo and Oeiras) were less mentioned. The concerns about the social outcomes are undoubtedly neglected.

Coming back to the 'possibility of comparison', some findings need further explanation. Firstly, it was possible to observe that only three systems attached targets or trends to their indicators: Mora, Oeiras and Mindelo. In Mora, and because indicators were behind an effort to implement standardised management systems, they were considered mainly as tools for internal management, necessary to assess the local council's performance and to monitor the outcomes of its actions. As indicators are continuously updated, they have been contributing to an effective assessment of several different local policies' trends. Regarding Oeiras' participation in the ECOXXI project, it was acknowledged that the project had the capacity to improve assessment of some local policies in order to better plan future initiatives (mainly within the Environment Department). It also enabled the comparison of the local council's performance with the one of other municipalities. Nevertheless, Oeiras only applied for the first 3 years of the project and, consequently, this process has come to a halt. Furthermore, it is assumed that the project did not contribute to a solid integration of local strategies, let alone regional ones, since information was not used for political decision-making and was kept inside the environment department. In Mindelo, although targets were defined, they were merely considered as a first step to establish 'ideal' trends that would have to be discussed and reviewed when implementing the LA21 strategy. However, there were no more debates about the indicators and as they were not updated, they did not accomplish the intended assessment. As for the other cases, they shared an absence of goals for the indicators' evolution, which diminished the possibility of assessing their convergence towards the local vision of sustainable development (Redondo, Aveiro, Oporto and Palmela). In general, it seemed more important that indicators met specific legal requirements or complied with other regional, national or European indicators than being used to establish specific local targets or enforce local transparency and accountability.

Secondly, another aspect is associated to what has been said in the *scope* criterion. Some of the sets were not targeting multiple sectors or domains crucial for local sustainable development, such as economic or institutional issues. Therefore, several local programmes, plans and goals were misrepresented when defining the indicators. Together with the absence of concrete targets for the indicators and the lack of support for the continuity of these projects, these findings corroborate the belief among the interviewed public officers that evaluation procedures in general are only now, little by little, becoming part of the local planning culture in Portugal. As it was stressed by one interviewee, local councils' "actions end up being *ad-hoc*, not resulting from any plan or programme, but only from arbitrary priorities and political timings that shift with the wind" (Interview 6). In the same line of thought, another statement sum ups this feeling: "we are in a country where evaluation is always the weakest link. No one gives much value to assessments" (Interview 2).

A third and final reflection is clear in Table 7.5. These experiences with sustainability indicators have been very focused on the local level, limiting their frontiers to the municipalities. None of them results from a regional initiative or are used to contribute to the consolidation of capacities, efforts and resources for monitoring tasks at a regional level. In Mindelo and Oporto, in Palmela, or in Mora and Redondo, several interviewees stressed that converging synergies to build a regional indicator system is a remote or even utopian goal, bearing in mind the difficulty to work in intermunicipal partnerships on issues that are not considered strategically relevant (such as sustainability indicators).

Funding

Funding is important not only because indicators are costly but also because if indicators are not incorporated in local budgets or are not supported by stable funding schemes, they are less likely to be updated or used, and therefore less likely to play a role in the integration of local strategies towards sustainability.

The relationship between funding and implementation and maintenance of indicators is quite clear: the case-studies that received stable funding managed to institutionalise the indicators (Oporto, Palmela and Mora) and the ones that were not financially supported have not been updated so far (Redondo, Mindelo and Aveiro). In the cases of Mora, Oporto and Palmela, major financial and human resources are used in the maintenance of the indicators. Curiously, this financial support was provided in municipalities with diverse financial realities, pressures and backgrounds.

It could be argued, as some interviewees point out, that stable funding schemes are difficult issues for small municipalities, inhibiting them from developing costly information systems. The pressure to comply with legal norms concerning the competencies and activities of local authorities is colossal, when compared to the absence of parallel technical and financial support from the National Government. This pressure is even more challenging for small municipalities that lack the specialised human and technical resources. However, our case-studies represent a fertile terrain of experiences that lead us to question how misleading this argument can be. The disparity between the case of Mora and Redondo is quite elucidative. Both municipalities have analogous financial constraints, comparable human resources, are inserted in the same region, and face quite similar problems and challenges towards sustainable development. They have, however, an opposite attitude towards the indicators and a different understanding of their role for local politics and local governance, which leads to an opposite situation concerning their financial support: one is highly supportive and the other very little supportive.

Nevertheless, although lack of funding is one of the most highlighted obstacles for the implementation of the indicators, issues such as ‘easy to collect, calculate and interpret’ and ‘feasibility and implementation costs’ were clearly neglected when designing almost all of the indicator sets. No mechanisms were discussed to guarantee gathering information at low costs in Mindelo, Redondo or Aveiro. Besides, even when data was available and was collected through costless procedures (such as in Aveiro, where some environmental indicators were updated through a student internship), the indicators were not used either, which refutes the funding argument. In opposition, we have seen in Palmela how innovative strategies were developed to collect information that is too expensive to gather by traditional mechanisms. Or, in the case of Oporto, how informal mechanisms established with several data suppliers were determinant for the continuous work on the indicators.

Moreover, even when the existence of European funds enabled the development of some projects that led to the set up of local indicators (such as the LA21 processes in Redondo or Mindelo), or even when these funds were available to build up indicators at regional or local levels, a major hindrance seems to prevent those initiatives from flourishing. It does not specifically concern funding, but the lack of vision and political support to the indicators instead. This is reflected in the weak role that the regional associations of municipalities have been playing in these issues, particularly when they could have a prominent position as knowledge-transfer institutions for the

indicators support and for the development of local institutional capabilities. They have a potential strategic function to push for a common indicators structure for the region, to raise funds or to promote awareness of the importance of developing those sets at the local level (see the Algarve experience). The example of their responsibility for the dissemination of LA21 processes in Portugal seems to corroborate this perspective. Fidélis and Moreno Pires (2009) concluded that those associations are working as important 'agenda transfer institutions', which enabled the creation of new sustainability projects at the regional and local level. This does not seem to be the case for sustainability indicators and monitoring strategies so far.

From a governance perspective, funding would not necessarily be dependent on governmental budgets only. The involvement of several stakeholders outside the public sphere can improve the availability of technical, human and financial resources. However, the case-studies do not show evidence of a strong involvement of different stakeholders, and even when they do (in the case of the LA21 in Mindelo or Redondo), they have not been contributing to strengthening funding capacities.

To sum up, indicators are costly and always imply financial support. However, this support goes hand in hand with the correspondent political commitment, vision and support. Together, they are crucial factors to generate the necessary efforts, resources and institutional capacities to implement and update the indicators.

7.2.6. Link with (Inter)National Networks

The *link with similar networks* or experiments regarding sustainability indicators is meant to assess the *learning* efforts developed to build local sustainability indicators in Portugal. This criterion is therefore understood as the capacity to learn from other experiences promoted at national or international levels. It also evaluates the way this learning can steer the role of the indicators in local governance. Those efforts are considered to have a positive impact on the legitimacy of projects, on the ability to deal with local knowledge without loosing sight of other territorial levels, as well as on steering different working relationships between multiple stakeholders or on developing innovative decision-making processes. Table 7.6 compares the findings considering this particular criterion.

In fact, the experiences with local indicators analysed throughout the research do not show much evidence of a strong influence of this learning effort. In general, the experiences are developed in relative isolation, strongly focused on the particular context of the city or village. Only in Oporto and Oeiras (and Palmela to a certain extent) was the link with other networks strong, which influenced profoundly their indicator set.

In Oporto, the involvement in the Urban Audit project was considered the major learning source that sustained the Monitoring System on Urban Quality of Life of Oporto, which brought several recognised advantages. First of all, it represented the earliest incentive and inspiration for the local council to implement its own urban indicator set, demonstrating the need and value of setting up a permanent information infrastructure to identify and monitor the city's trends across space and time. Secondly, it allowed for several debates and discussions at the international level about methodological constraints and improvements. Finally, it brought international recognition to the

local project as a good practice concerning urban quality of life monitoring systems, which has increased the legitimacy and credibility of the set and helped to maintain the politicians' interest and support. In Oeiras, the participation in the ECOXXI project, although with contrasting outcomes on the politicians' interest, has proved to be an extremely useful learning experience for public officers at the environment department as well as for the set up of Oeiras own local sustainability indicator system. ABAE's initiative has helped to promote a much needed debate platform for local councils and has also functioned as an important education programme for public officers. Moreover, it provided guidelines and methodological support for evaluation strategies in Oeiras. Given the lack of national support, either through financial incentives, national guidelines or a stronger promotion of local experiences, this may be regarded as a key achievement of the ECOXXI project. In Palmela, the coordination team took the effort to learn from experiences in the region of Barcelona, Spain. Although it was but a sporadic contact and was not inserted in a particular network, this was crucial to start the process and raise awareness of its importance for local policies.

Table 7.6 – Link with (inter)national networks

	Learning
Redondo	**Weak**. Strongly based on expert work without involvement in similar networks.
Mindelo	**Weak**. Strongly based on expert work without involvement in similar networks.
Aveiro	**Weak**. Strongly based on internal and expert work without involvement in similar networks.
Oeiras	**Very strong**. Inserted in a national network of local sustainability indicators.
Oporto	**Very Strong**. Major learning efforts from international experiences and from the Urban Audit project.
Mora	**Weak**. Strongly based on internal work although participating in national debates regarding the IMS.
Palmela	**Moderate**. Major efforts to learn from other experiences although without involvement in any specific network.

For the other case-studies, national or international learning efforts are revealed in the numerous references to gather knowledge through extensive bibliography reviews and analysis. At the national level, there are major references to the ECOXXI itself, the Algarve system or the NSDIS. At the international level, projects tend to follow OECD recommendations, the Urban Audit or the European Common Indicators guidelines. In the case of Redondo or Mindelo, those efforts were mainly developed by the team of experts, which prevented the rest of the staff of the local council from learning from those sources as well. In Aveiro and Mora there are only short references to other experiences to justify the choice of some indicators (for legal and comparative reasons) and to provide them scientific credibility, but not more than this.

A final aspect clearly emphasises that learning and inspiration for the projects was not based on other Portuguese local experiences and that the exchange of knowledge, know-how and experiences is very poor within the national territory.

7.2.7. Communication with Society

Regarding the *communication strategy* set up to disclose information to the general public about indicators trends, it is considered that the broader the communication channels, the better can the indicators contribute to good governance for sustainable development. Sustainability indicators have a key knowledge function, not only for planning and decision-making, but also for the society, as they enable to improve awareness of sustainable development, to encourage behavioural changes and to increase transparency and trust in local policies. As Gahin *et al.* (2003, p.666) underlined, they are a 'worthwhile effort with many intangible benefits that provide a foundation for change', helping to 'create the social knowledge, connections, and inspiration for meaningful action'. However, Table 7.7 outlines how poor the performance of this criterion was for almost all of the case-studies.

Table 7.7 – Communication with society

	Communication with society
Redondo	**Very Weak**. No communication strategy was discussed, defined or put into practice.
Mindelo	**Weak**. Some communication issues were defined by the team of experts, but never put into practice.
Aveiro	**Weak**. Some communication issues were defined by the local council, but never put into practice.
Oeiras	**Moderate**. Annual national dissemination of the final index by ABAE, and publication in the local media.
Oporto	**Strong**. Several communication channels (reports, website, seminars and conferences), but only during the first years of the project (2002-2004). Currently under major revision.
Mora	**Weak**. There is not a general strategy, only some mechanisms to report specific indicators (mainly the ones required by law).
Palmela	**Very Weak**. Although some attempts were carried out, it was never put into practice. Currently under major revision.

Almost all the experiences failed to report or disclose the indicators to the outside of the local council. In Redondo, Aveiro and Mindelo, because data was not collected and indicators were not updated, they could not be disclosed either. Nevertheless, throughout their development process, communication mechanisms or procedures were not particularly addressed. In Redondo they were totally dismissed and target groups for the different subsets were not specified. These findings seem to be in accordance with the fact that indicators were not taken seriously in Redondo. In Aveiro and Mindelo, some procedures were devised during the development process. In Aveiro, a calendar for the periodic release of information was created, for instance. In Mindelo the importance of presenting data in an easier and understandable way (using stoplights colours and smile figures) was recognized. Nevertheless, when the steering group in Mindelo produced an

isolated mid-term evaluation report about the LA21 action plan for citizens, there were no references to the indicators. They were not considered as crucial communication tools that could strengthen dialogue or encourage debates about local sustainability with citizens.

On the other hand, when indicators were updated and monitored (in Oeiras, Palmela, Mora and Oporto) they were only used for internal communication, lacking external visibility and solid disclosure strategies for citizens. Because external communication was one of the goals of ABAE, only in Oeiras was the final index published in the national and local media for 3 years, as well as small news in local newspapers about the overall position of Oeiras when compared to other municipalities and in the areas where it got the best scores. Chapter 2 stressed the clear divergence of opinions between those who support the communication virtues of an index and those who highlight their shortcomings. Although the potential to instigate debate of a single easy-to-communicate and compact report is recognised, public officers criticized this narrow communication procedure in Oeiras. These critiques were mainly associated with the poor understanding of the municipalities' progress across time and space for the 23 indicators. In Palmela, external communication was not neglected. Since the beginning of the project, indicators were recognised as local 'statistics' that should be available to the general public. However, some communication efforts, such as the development of a dedicated website with specific information and the publication of a local statistical yearbook, did not succeed and were postponed to a later stage. The aim is to overcome this communication 'failure' in a near future, even without considering for now the development of headline indicators that could ease external communication and summarize the indicators message. In Mora, there are several mechanisms in place to report some indicators, but they focus mostly on information that is required by law. There is not an overall communication strategy for the indicators, largely because they are perceived as useful mostly for internal managerial purposes. Finally, Oporto represents the experience that most explored the communication issue. The coordination team was able to develop several communication channels, which included two annual reports (2003 and 2004), a website that is still active and the dissemination of results and activities in several seminars and conferences in Portugal and Europe. However, these strong efforts during the first years of the project were not continued and no more results were released. The team recognizes that since 2005 efforts have been channelled to improve internal communication, but do not neglect two particular issues: the importance and the need to enforce a communication strategy and the need to find an effective way of doing it, since they are aware that producing reports is not the best way to reach people, raise awareness or change behaviours.

In conclusion, we reaffirm the clear deficit in communication strategies. If indicators are not disclosed to external actors, it is as if they did not exist for citizens or the local community. Using the metaphor of one of the interviewees, we emphasise that if the general public has no use of them, they cannot contribute to increase accountability, transparency, legitimacy and democracy of local policies towards sustainable development, which means that they cannot contribute to a real change in governance settings: "I love sports, but when I try to see a rugby game I don't know what they are doing. If I don't understand, I will not be interested in seeing it. But if I do understand…" (Interview 22).

7.3. The Use of Sustainability Indicators at the Local Level

We will now concentrate on the second operational question in order to understand if and how the indicators are (or were) effectively used, by evaluating different outcomes within the scope of concrete, conceptual and symbolic uses. Do sustainability indicators actually accomplish their purposes? Are they simply ignored and not used at all? Or do they divert attention and/or camouflage 'hidden' tactics? These questions were already explored bearing in mind the context of each case-study. Now, we intend to compare and connect all the findings (see Table 7.8). The three broad headings of possible uses are analysed in all of the case-studies taking into account two distinctive phases for the indicators. The first phase includes their definition and development until they are set up. The second one, when this is the case, involves all the stages from then on: monitoring, reporting and follow-up. This is not an easy and straightforward analysis, but we consider it a useful exercise with interesting results.

Table 7.8 – The use of Sustainability Indicators by the different case-studies

	Instrumental Uses	*Conceptual Uses*	*Symbolic Uses*
Redondo	No particular uses assessed	Very superficial	No particular uses assessed
Mindelo	No particular uses assessed	Very superficial	No particular uses assessed
Aveiro	No particular uses assessed	Very superficial	No particular uses assessed
Oeiras	Several uses although mostly within the Environment Department	Some uses within the Local Council with little impact in the local society	No particular uses assessed
Oporto	Several uses	Some uses within the Local Council with little impact in the local society	Difficult to assess*
Mora	Several uses	Some uses but mostly within the Local Council	Some
Palmela	Several uses	Some uses but only within the Local Council	Difficult to assess*

*** It was not possible to assess the discourse of politicians about the indicators**

Instrumental use

This type of use reflects the direct connection between sustainability indicators and decision outcomes, which means that they are used for concrete actions, procedures, programmes or plans, or for specific policy or management decisions. It is considered instrumental or concrete use when indicators lead to changes in policies, to new agendas or plans, or when indicators change the allocation of resources from one programme to another, are incorporated into regular working routines, are used for comparison with other contexts or allow the monitoring of strategies (Gahin *et al.* 2003, Gudmundsson 2003, Hezri 2004, Hezri and Dovers 2006, Rosenström 2006). This

type of use is probably the easiest to assess in highly dynamic and complex governance contexts, as it is less problematic to gather evidence (when it exists!) of connections between indicators and chains of action.

From the findings presented in Table 7.8, it becomes clear that when data was not collected (not even when indicators were selected), nor the system was updated or monitored, they were of no concrete use (just like in Redondo, Mindelo and Aveiro). Even if there is the recognition that some data is available, indicators were ignored and, consequently, they had little chances to influence policies or decision-making at any level (administrative, technical or political). In opposition, it is possible to assess quite interesting uses in the projects that were taken forth. In Oeiras, several instrumental usages were identified, although they mostly remained inside the environment department and at lower levels of decision-making. At the highest levels, politicians ignored them and did not consider them useful, not even for symbolic use. A number of examples of different instrumental usages were found, such as the already documented change in evaluation procedures of some strategies associated with environmental education (see Chapter 6) or the comparison of the performance of the different participating municipalities. Indicators also served as an internal audit to adjust and integrate some actions in the Local Council (via the Environment Department) and were incorporated as technical and procedural knowledge in the development of the Oeiras local system of sustainability indicators. In Oporto and Palmela, indicators played an important role in reorganising working routines within the Units responsible for them, in monitoring strategies (such as Sports in Oporto or Culture in Palmela), in influencing some political decisions (data was and is constantly requested for many political meetings). In addition, indicators were incorporated into planning activities (such as the development of a Social Diagnosis or a Sustainable Strategy for Oporto, or the Education Chart for Palmela) and allowed comparisons (mainly in Oporto) with other cities at the European level. In Mora, the indicators were clearly targeting internal management and several different instrumental uses were identified. In the first place, the indicator system allowed the organisation of data collection procedures that did not exist and helped to systematise information for regular monitoring procedures for different strategies, besides influencing decisions, policies and plans at the administrative, technical and political level.

Conceptual use

Conceptual use is related to changes in values and to new conceptual understandings of development problems in a city or village. It is associated with the type of uses that enable the creation of new ways of thinking, new ways to discuss and debate a situation among its users. It is, therefore, a difficult type of use to evaluate. This research looked for several nuances in the discourses of the interviewees. It also tried to contrast contexts before and after the development of indicators and to 'compare' official documents with the perceptions of the actors in the field. Under this classification of uses several aspects are included, namely: discussion forums or other means of bringing people together, value shifts or changes in daily life routines, dissemination of information, increase of awareness of local sustainable development, the ability to 'get the big picture', new working routines and better communication channels (Gahin *et al.* 2003, Gudmundsson 2003, Hezri 2004, Hezri and Dovers 2006, Rosenström 2006).

There were more conceptual changes due to the development of the indicators in Oporto and Palmela. The coordination teams recognised how useful the experiences were, and still are, to learn about local problems and challenges of sustainable development or to think about facts and

issues never raised before (for instance, the contrast between quantitative and qualitative data concerning criminality in Oporto). Moreover, they helped to establish contact with several data suppliers as well as to improve the relationships with other departments within the local council. Indicators also helped to raise awareness of the need to integrate them and to implement a comprehensive system that, although very demanding, could aid to steer local policies. Nevertheless, these outcomes have been notorious mostly inside those teams, and possibly also within some departments at the local council, but with few effects on society and the local community. In the case of Palmela, their effects did not go beyond the department walls, as the project did not manage to involve external actors or to provide knowledge and information about the indicators to the municipality. In Oporto, communication with the public was established via two major reports and a website, but public officers recognised that these were not the best procedures to reach the majority of citizens and to promote conceptual use. As debates or forum discussions were not held after the release of such information, it was not possible to assess major conceptual changes for other actors.

In Mora, concrete examples of conceptual uses were cited: the acknowledgement of the importance of having available and systematised data and the better understanding of environmental issues. The comprehensiveness of the concept of sustainable development was not a major concern as the set was associated with the implementation of a standardised management system related to quality, occupational health and environmental issues. Those were the main priorities to assess. Public officers also emphasised that the communication strategies within departments and also with politicians were improved. It is worth underlining that the indicators were a fraction of several value and cultural shifts operated in that local council. However, once again, those conceptual outcomes were not extended to other sectors of the civil society, although with the start of the LA21 process in 2009 they contributed to the elaboration of a Sustainability Diagnosis that was released to the community in a website and provided a basis for a forum discussion with invited local organizations[1].

In Oeiras, the ECOXXI project provided several opportunities for debate and discussion among public officers of the municipalities that applied to it and for raising awareness of several local needs. It was also used as thinking tool to enhance integration and evaluation of several programmes in the local council. The publication of the final ECOXXI results each year promote interesting discussions at the national level and receive much attention from the media. Nevertheless, it was not possible to assess the extent to which the score of Oeiras (always in the first places) influenced any conceptual use of this index in the local community.

As for the other case-studies, conceptual changes caused by the indicators were very superficial as they did not have the capacity to add further concerns or issues to the LA21 debate on local sustainability (in Mindelo and Redondo) or to the environmental and sustainable development vision (in Aveiro). As the design of the indicators was too centred on experts' perspectives and technical concerns, they were unable to empower other groups, to foster debate, to raise awareness or encourage behavioural changes, within and outside the local council.

[1] The LA21 process was being implemented when the final findings of this research were written, which, on the one hand, made it impossible to assess other potential recent uses, and, on the other hand, transformed these new developments into an interesting matter for further research to evaluate future consequences for the role of sustainability indicators in Mora.

Symbolic use

For the purposes of this research, symbolic use was considered to include all the type of uses related to symbolic, political or tactical outcomes associated with the indicators. Under this classification, uses are much more on the political side, than on the technical or on the community side, and are interpreted as delaying political tactics for varying reasons, namely because of the ideology or interest. Therefore, indicators were seen as promoting inaction, protecting them from critiques, or ensuring that decision-making is carried out with the appropriate knowledge, which may legitimize actions, persuade others to a particular view of problems and their solutions, support a pre-determined position or serve the purposes of the political discourse or propaganda (Gudmundsson 20003, Hezri 2004, Hezri and Dovers 2006, Rosenström 2006).

Symbolic uses were evaluated mainly through the interviews to local politicians and through several discursive elements provided by public officers about politicians' attitudes or positions. We applied the classification of Norman (2002) to assess the perceptions of local politicians, which proved to be quite challenging. The classification of Norman analyses different perspectives on performance indicators and categorises politicians' positions as 'True Believers', 'Active Doubters' or 'Pragmatic Sceptics'.

The great majority of politicians could be categorized as 'Active Doubters' since many underlined their distrust of indicators and believe that they have already sufficient knowledge of local needs and problems. Some of them went further by stating that indicators "should be considered as data, not to make a decision" but to give scientific credibility to a decision already taken. Moreover, several public officers affirmed that when politicians use indicators, their aim is much more to mask reality than to make it more clear or transparent. The lack of political will and commitment to implement some indicator projects also corroborates this perspective. In some other cases, like in Oeiras, the good position of the municipality in the national ABAE ranking could have been used by politicians for marketing, at least, to publicise and praise the municipality's performance, but that did not happen. The interviewed political leader was not even aware of what ECOXXI was about, although he knew that he had a flag just in front of the local council's building for that exact reason. There are some statements that allow us to conclude that most politicians do not like to use indicators to compare local realities, given the high rivalry between municipalities. Finally, other politicians did not find the subject important enough to find some time for the interviews.

In opposition, another group of politicians could be considered somewhere between the categories of 'True Believers' and 'Pragmatic Sceptics'. Some of them, as for example in the case of Mora, affirmed that they would use the indicators to prepare the next electoral programme. They also use information from the set when they need to report to any agency or newspaper or to make a decision. They feel more accountable and legitimate to act when using that information. To validate this position, one of them stated that he knew that at the time of the interview there was only one civil servant that was not working in the local council. In addition, he used a curious expression: "we are not 308 evildoers, we are not 308 corrupt politicians, we are not 308 bandits, we are not! But there are some, unfortunately, but they are a dozen and we know who they are". Some of local projects (Mora, Oporto and Palmela) received massive financial support because indicators were considered important for politicians.

In conclusion, the indicator systems that were implemented and maintained over time were also the ones that were prone to multiple uses, although the instrumental use usually prevailed. Conceptual outcomes, though important, were restricted to very few actors inside the local authority. Because the people involved in the indicators' choice and development were also the ones that mostly used them in their work, they had the capacity to effectively change procedures, administrative decisions and operational actions. These findings are in harmony with the arguments of Hezri and Dovers (2006), who defend that policy-oriented indicator systems, such as expert-based and top-down approaches, are more likely to result in instrumental use, as they reside close to the policy decision locus. Conversely, experiences with indicator programs based on community approaches, which were not the case in Portugal, are more likely to provoke conceptual or symbolic uses (see Gahin *et al.* 2003).

Finally, once realised who the users are, it is unambiguous to affirm that the local government sector is the main actor influenced by the indicator project. The uses are therefore limited to governmental spheres and have played a limited role in steering or changing local governance arrangements so far.

7.4. Concluding Remarks

Power relations around sustainability indicators' development and use remain within traditional governmental modus operandi. Until more actors are involved in the choice of indicators or until indicators are reported, communicated and debated with the community, knowledge is locked within governmental walls. As such, the accountability and legitimacy of policies become more fragile while neither political flexibility in decision-making nor the discretionary way of making ad hoc policies are lost. More efficiency without more democracy can undermine the credibility and legitimacy of local governments to act towards sustainable development.

Nevertheless, several extremely positive findings were gathered from the most successful experiences studied: Oeiras, Oporto, Mora and Palmela. The high number of criteria that performed well proves that, demonstrating that empirical findings were very close or showed ability to achieve the supposed ideal outcomes. Those criteria were: scope, timeframe, coherence, political commitment, sensitivity to change, sectoral or horizontal coordination, training, feeling of ownership, funding and link with (inter)national networks.

Some final thoughts and conclusions will be explored next, closing the learning cycle of the research. To sum up, our attention must be drawn to the way the findings reported in this Chapter are somehow interrelated and how the performance in several criteria has clearly influenced the use of the indicators.

CHAPTER 8
CONCLUSIONS AND RECOMMENDATIONS

The most successful sustainability indicators experiences in the Portuguese local context proved to be key steering processes to improve 'government' capacities for sustainable development (This Chapter, p.216)

This research aims to understand, interpret and explain the experimental role of sustainability indicators in local governance contexts in Portugal. It does not intend to make judgements about what sustainable development means, how it should be defined or which are the best indicators to assess it. Instead, it intends to evaluate how sustainability indicators can contribute to challenge current institutional practices for sustainable development and how far they are used in local contexts. It starts from a general definition of sustainability indicators, integrating all type of systems of indicators that aim to bring together different areas of development and put them in perspective. Sustainability indicators are considered as processes that are context dependent. Therefore, we assume that they cannot be separated from the context in which they are developed. The actual use of sustainability indicators and their steering potential are conditioned by the particularities of governance contexts, by different institutional patterns, by different interpretations of sustainable development and most importantly by the main values, positions, motivations and attitudes of the most relevant actors involved in the work with the indicators. Interesting lessons on understanding sustainability indicators in context may be retrieved from the research findings, which also provide crucial contributions for the key role they may play in strengthening governance arrangements for sustainable development at the local level.

This final Chapter is divided in five parts and provides a reflection on the theoretical and empirical findings. The first part intends to synthesise the line of argument of the thesis and the main contributions of all Chapters for understanding the role of sustainability indicators in local governance contexts in Portugal. The second part aims to bring forth the conclusions on the major problems and implementation constraints faced by the case-studies, while the third part focuses on their main positive outcomes and uses. The fourth part draws some conclusions about the main implications of the experiences with sustainability indicators in Portugal particularly regarding the core values of good governance for sustainable development when comparing with other European experiences. The final part provides some recommendations for a more effective role of sustainability indicators in local governance for sustainable development.

8.1. Overview and Main Ideas

Chapter 1 introduced the research aims, exploratory questions, methodology and structure, considering the vast literature about governance and/for sustainable development and sustainability indicators. It contextualized the research framework where sustainability indicators are assumed to be processes with appealing steering characteristics for 'improving' governance settings for sustainable development. This is considered to be far more relevant for the context of this research than to perceive them as just another technical tool or participative mechanism to strengthen governance.

Chapter 2 helped to understand the policy debates and fundamental discussions about governance for sustainable development and explored the great variety of related perspectives and arguments. The tensions between core values of governance, namely between *legitimacy*, *efficiency*, *accountability* and *democracy*, and the dilemmas about the 'implementability' of new policy instruments are crucial issues that must be taken into consideration.

Regarding the definition of *governance for sustainable development* as the set of institutionalized patterns (formal or informal principles, norms, practices and mechanisms) for interpreting and pursuing sustainable development policies and goals, it was possible to see how different parts of the related literature explore their major issues of concern at different territorial levels. Notwithstanding the different positions, they all focus on institutions and institutional change and share common problems (Kjaer 2004). This is why institutional analysis became central to the different governance approaches and positions, and therefore central to this research. As such, our institution-based research was supported by a broad definition of institutions, which includes not only the routines, procedures, roles, strategies and organizational forms of political activity around the development and implementation of sustainability indicators, but also the beliefs, paradigms, cultures and knowledge, that surround, support and even contradict those same roles and routines (March and Olsen 1989).

In this Chapter 2 we then drew our attention to the local level. It was found necessary to discuss the normative factors that may improve local governance for sustainable development. This enabled us to identify a set of 'ideal' criteria which were useful to design and structure the analytical framework of the empirical study and to compare our findings. We concluded that good governance for sustainable development ideally implies stronger horizontal and vertical integration of 'agreed' principles of sustainable development within governments (with high demands for coordination), and effective ways to involve and mobilize the civil society (challenging the nature of democratic accountability) in the formulation and implementation of sectoral policies (in overlapping networks).

Chapter 3 focused on the debate about the methodological complexities of developing sustainability indicators. We analysed how sustainability indicators have evolved from discrete indicators to more integrative and comprehensive indicators over the last decades and how they have been structured at the international and national levels around the world. It also explored and clarified different ways of understanding the characteristics, roles, methodological issues, uses and possible outcomes of sustainability indicators. This review highlighted several aspects that can interfere, constrain or potentiate the normative governance factors for sustainable development at the local level.

The main methodological complexities were analysed, namely: the particular tensions between top-down vs. bottom-up approaches, context specific indicators vs. global common indicators, quantitative vs. qualitative indicators, indicators measuring processes vs. their outcomes, aggregation vs. simplification, the particular concerns of different frameworks to structure indicators and the criteria to select indicators. We came to the conclusion that the methodological complexities and uncertainties around sustainability indicators are tremendous and must be understood as 'starting places for discussion and exploration of potential action' (Innes and Booher 2000, p.183), which is particularly important if one considers indicators as ongoing learning processes.

Chapter 4 was crucial to bring forth considerations about concrete experiences with local sustainability indicators in Europe. We will come back to this later on this Chapter. The Portuguese reality regarding the implementation of sustainability indicators at different territorial levels was also explored and its findings are of the utmost importance for this research. Experiences at the national and regional levels were analysed and crucial information was gathered about the development of sustainability indicators at the local level in order to map out the current Portuguese reality.

From the analysis of the National Sustainable Development Indicator System and, particularly, the regional system of Algarve, it was possible to see that they represent good examples of efforts to develop indicators aiming to assess national and regional sustainability paths and to horizontally and vertically harmonise data and information. From the review of these projects we also concluded that they combined 'expert-oriented' approaches with participatory initiatives to develop the systems, challenging traditional relationships between government entities and other stakeholders and fostering new governance arrangements and conditions to change administrative and political cultures.

Nevertheless, the less positive aspects are mostly linked to the difficulty of regularly updating and disseminating the aforementioned indicators. At the same time, these projects (but most of all the national one) were not very well succeeded in providing a strong impetus for the development and disclosure of general guidelines for the local level, especially when there was no other support from the National Government.

From the questionnaire applied to all of the Portuguese Local Councils, it was possible to see that 81% of the respondent municipalities answered that they did not develop any integrated indicator set targeting sustainability issues, which means that only 19% (30 municipalities) declared that they developed or were developing a specific comprehensive set for their local context. Most of these few, but positive, experiences are very recent initiatives (50% started to be developed or were set up between 2008 and 2009) and had as a major driving-force the implementation of LA21 processes (63%), accompanying the also relatively recent emergence of LA21 processes in the country (see Fidélis and Moreno Pires 2009).

The pertinent findings explored in this Chapter outlined a general picture of local experiences, where the (non)development of sustainability indicators go hand in hand with a fragile monitoring culture towards local sustainable development, even if slow progresses are being made. From these results and several other informal contacts along the research, it was possible to identify and select seven case-studies to analyse in detail, bearing in mind that they represent the oldest and somewhat successful experiences in Portugal. Above all, they correspond to some of the few projects in a country where the implementation of assessment tools for sustainable development is quite poor. This means they stand for a unique opportunity to study, understand and explain the processes related to sustainability indicators in Portugal.

Chapter 5 described the methodological approaches that determined the selection of the case-studies and the elaboration of the framework to explore and analyse them. It also explained how Chapter 6 and 7 are structured by referring to the theoretical debates of the first Chapters.

Chapter 6 explored in detail each one of the seven indicator systems in Redondo, Mindelo, Aveiro, Oeiras, Oporto, Mora and Palmela. In the first place, it outlined the general features of those local

projects. As such, we can conclude that:

- The oldest indicator systems (Aveiro, Oporto and Palmela), or the processes behind the development of these indicators, started before or around the year 2000 (1997, 1998 and 2000 respectively), although the final sets took from 4 to 9 years to be defined or approved. All the others started after 2003 and their process of definition was somewhat faster: 3 years at the most. The first one to be defined was Oporto in 2003 and the last one was Mora in 2006. All the others were defined between 2004 and 2005.

- Regarding the type, number and conceptual frameworks of the indicators, most of these experiences are based on a list of indicators (ranging from 18 to 170 indicators) and are mostly based in issue – or theme – based frameworks (Redondo, Aveiro, Palmela, Oporto and Mora), while some also use pressure-state-response (PSR) frameworks (Mindelo, Redondo and Oeiras) (those conclusions are very similar to the findings of APA 2007 regarding some international and national projects on sustainability indicators). Only in one case-study (Oeiras) is local sustainable development intended to be assessed by one single index and that is because of the national project ECOXXI. Moreover, there is no evidence of efforts to build a shorter set of headline indicators in any other case-study (apart from Mindelo, where the set is only composed of 18 indicators).

- Regarding the scope of the systems, they incorporate from narrower to broad concepts of sustainable development, being the environment dimension the most present dimension. The economic and institutional dimensions are the most undervalued, while at the same time some 'recent' issues such as health, justice, democracy and public participation are misrepresented[1].

In the second place, there are other interesting findings that need to be emphasised. The diversity of *driving-forces* behind the projects enabled us to analyse a variety of situations and leitmotifs which followed the efforts to build local sustainability indicators in Portugal. We could not find much influence of "outside-in" programmes from European or international levels, apart from the experience of Oporto and to a lesser extent of Palmela. Besides some attempts to incorporate some guidelines or particular indicators from other international projects (such as the use of the European Common Indicators, Urban Audit or OECD recommendations) we do not consider international influences a major driving-force. Moreover, the driving-force projects can be distinguished according to the labels 'participatory-driven' (or citizen-oriented) or 'efficiency-driven' (or expert-oriented projects). The first group derives from the implementation of LA21 strategies (Redondo and Mindelo) or LEP (Aveiro), while the second group derives from the implementation of management systems (Mora), of a statistical European project (Oporto), of a national programme that compares the performance of municipalities regarding sustainable development goals (Oeiras) and of national regulations regarding the evaluation of Local Master Plans (Palmela). Finally, sustainability indicators are mostly a result of broader projects, where the establishment of monitoring indicators represents a specific technical stage, except in the cases of Oporto, Palmela and Oeiras, where the projects have 'their own identity'.

[1] Nevertheless, the research carried out by Mineur (2007) concluded that 'soft' issues such as democracy, raising awareness or learning are also slowly starting to emerge as new concerns in a country like Sweden. She considers that this is a leading country in terms of implementing sustainable development policies and working with sustainability indicators at different governance levels. As such, and given the difference in the level of maturity of both countries in such matters, this should not be considered as a negative aspect in Portugal.

From the point of view of the indicators' operationalisation, update and use within local council spheres, we can consider some sets as very successful experiences. This is the case of Mora, Oporto and Palmela. The cases of Redondo, Mindelo and Aveiro seem to be in the opposite situation. Oeiras stays in the middle, since the set has not been updated and used lately, but only because local 'energies' were directed to the development of a specific sustainability indicator set, tailored to local needs. Interestingly, there seems to be a correlation between the type of driving-forces and the success of these experiences. The most successful ones, which have been updated since their definition, are the ones derived from expert-oriented projects. Even considering the argument defended by Innes and Booher (2000), that the definition of indicator sets and their operationalisation are not what matters most, but the way the learning and change takes place among key players during the course of their development, the less successful projects cannot be considered to perform well here either. Nevertheless, what is crucial is to understand *how*, *why* and *in what circumstances* those projects 'failed' or 'succeeded', centred on the main criteria used to explain the case-studies.

Finally, it started to be clear throughout Chapter 6 that there is a common trend in the discourses on indicators and the way they are generally perceived by the interviewees, namely sustainability indicators are mostly understood as technical tools or monitoring instruments with highly technical complexities. They are rarely perceived as processes that may have other roles with steering potential to improve governance for sustainable development. Therefore, expert-knowledge assumes critical relevance in all of the case-studies when compared to lay-knowledge. In fact, this discourse line determines 'who participates' and 'who decides' and it explains why some groups of stakeholders are excluded from the process of developing those indicators.

Chapter 7 tried to retrieve some lessons from the comparison of the case-studies, using a particular typology-framework based on normative criteria for good governance for sustainable development. We analysed how the Portuguese experiences have contributed, or not, to the strengthening of relationships between local governments and other local actors, or between different governmental levels. Moreover, we tried to ascertain if these experiences have boosted and/or shaped the creation of new networks, new institutional arrangements or new communication channels that steer policy integration horizontally and vertically (Holman 2009).

We now intend to highlight our major findings and to point out the key obstacles faced by those projects, as well as their most significant outcomes, uses and contributes to challenge governance for sustainable development in Portugal.

8.2. Problems and Implementation Constraints of Local Sustainability Indicators (in the case-studies)

Most of the obstacles are related to the malfunctioning of local *governments*, far away from the even more complex obstacles and problems of *governance* for sustainable development. In fact, we identified in the comparative study some structural problems related to traditional institutional and governmental activities, which are difficult to change and persist throughout the development of sustainability indicators. In line with many arguments of historical institutionalists, we conclude that sustainability indicators are inserted in self-reinforcing historical, cultural and social institutional path-dependencies, such as poor evaluation and monitoring cultures, limited disclosure of public

information outside governmental spheres, political distrust of indicators and the transparency they may bring to local policies, etc. Nevertheless, it was possible to see that sustainability indicators do not need 'critical moments' to occur to produce some changes, unlike historical institutionalists argue.

Evidence from the case-studies points out that several actors influence the performance and outcomes of the indicators through their "own sense of agency", their personal dedication and involvement, their daily activities and personal decisions. This is in accordance with the arguments of sociological institutionalists, who defend that a new institutional practice tends to be created when it is highly valued by certain actors in a certain cultural environment.

Further exploring this perspective, discourse institutionalists add some interesting insights that our empirical evidence confirms: the ideas, interpretations and meanings attached to the indicators shape their steering potential. Exploring the discourses - what is said, where, when, how, and why - of the main actors was crucial to see how indicators were understood and interpreted and how this has influenced the capacity of indicators to overcome, or not, certain obstacles and challenge their outcomes and uses. As argued before, the majority of the interviewees considers sustainability indicators as mere technical and performance tools, which somehow reflects the positions of rational institutionalists.

Rational institutionalists argue that institutions are crucial to enhance efficiency and maximize preferences and goals, and that indicators are instruments that provide information to make better decisions and to devise better strategies for sustainable development. Rydin (2003) argues that such understanding of sustainability indicators perceives them as simply another set of performance indicators within prevailing rational practices. As such, they are treated like any other evaluation tool.

Coming back to the implementation constraints and to the obstacles these experiences faced, we can distinguish two different situations: 1) obstacles that prevented the less successful indicator sets from being effectively implemented or updated at the local level; 2) obstacles that prevented the most successful cases from further steering governance arrangements for sustainable development.

1) Obstacles that prevented the less successful indicator sets from being effectively implemented or updated at the local level were due to:

- *Weak political commitment and support*: in general, indicators are perceived by politicians as monitoring instruments with technical specificities that should be dealt with by public officers and experts. Some politicians also feel they already know their territory well enough for efficient decision-making and therefore rely on their individual knowledge. Both perceptions determine the way they misunderstand or are not aware of other potential roles for the indicators (excluding the very technical ones), and they even 'forget' how helpful they can be for political decision-making. In addition, they are very unwilling to risk developing an assessment tool that may make local trends and territorial dynamics more visible and local policies and their outcomes, which do not depend entirely on local actions, more transparent (while possibly debilitating their political image). Political distrust and misunderstanding of the role of indicators undermines the possibility of providing indicators

with the necessary instruments and resources to be institutionalised and to transform them into laudable sets that can compete with many other strategic issues at the local level.

- *Problems in assigning operational responsibility*: the capacity to internalise the processes, routines and procedures of data collection and analysis is reduced when indicators are developed by external consultants or experts. In addition, further problems emerge when responsibilities for the work with indicators accumulate as "just" one more task someone or some department must carry out; when responsibility is assigned to sectoral departments with weak transversal influence and that are distant from the Mayors' influence; or when no human resources are specifically allocated to work with the indicators. This highlights the sensitivity of indicators to political shifts or policy contexts.

- *Poor sectoral coordination within the local councils*: many interviewees consider as major obstacles to sustainable development actions (and particularly to the indicators' performance) the complex way of working of local authorities, the malfunctioning and lack of communication between services, departments and public officers, the consequent lack of articulation and integration of actions and sectoral programmes and the lack of transparency and will to disseminate data within departments.

- *Lack of stable funding*: the implementation of the indicators is greatly hindered when it is not incorporated in local budgets or it does not have a stable funding scheme. This is highly dependent on political commitment, vision and support, and political priorities. Nevertheless, the criteria to choose the indicators, such as 'easy to collect, calculate and interpret' and 'feasibility and low implementation costs', or creative mechanisms that guarantee information collection at low costs were neglected when the least successful indicator sets were designed. In addition, the non-involvement of other stakeholders outside the public sphere undermined the potential to have more technical, human and financial resources available.

- *Poor training regarding sustainable development issues*: training programmes in local councils are directed to basic, procedural or legal areas, where sustainable development issues are not particularly relevant. Working with sustainability indictors has not changed this reality much, which determines to some extent the need for external expertise and support.

- *The power of expert-knowledge over other types of knowledge*: the predominant rational discourse on indicators and the need for expert support, in some cases, emphasise the expert-knowledge supremacy. Because of this, key actors - such as the ones that had to work with the indicators in the first place, or even other local actors - were excluded from the discussion about the choice of the indicators, their methodological complexities and the procedures to collect, analyse and disclose them. In addition, interviewees unanimously agree that the general public does not have a specific interest for such issues or does not have the adequate knowledge to add positive insights, but does have the right to be informed, although they do not need to be involved. This means that no other kind of power or influence over the process is granted to the general public, or even to other local actors.

- *Weak feeling of ownership of public officers towards the indicators:* since public officers were excluded from the decision process of choosing the indicators in some cases and/or since no clear responsibilities were assigned to them after the indicators' definition, some public officers felt that indicators were not their responsibility. Furthermore, they did not have the motivation together with the necessary conditions to overcome the innumerable obstacles of such a demanding technical challenge.

- *Distrust of the National Statistics Institute*: there are several affirmations underlining a certain distrust of the National Statistics Institute (INE), even when this Institute could play a particularly important role as a key (technical) actor, given the need for expert support. This is a curious contradiction which can also be found in other countries, and is not specific of Portugal (see Chapter 4).

- *Absence of formal support and/or guidelines from the central government:* the lack of national support, through financial incentives, formal support or guidelines is generally felt as a major hindrance to steer new practices or strengthen the (few) existing ones. In addition, almost every interviewed public officer underlined that the non-existence of national platforms to promote awareness of the importance of developing local sustainability indicators and to support debate is a practical obstacle to the exchange of knowledge, know-how and experiences in the national territory. The major Portuguese references in local work around sustainability indicators are the Algarve regional set, the National system and the ECOXXI project.

2) Obstacles that prevented the most successful cases from further steering governance arrangements for sustainable development:

- *Communication with society:* the different projects analysed by this research were ineffective in generating synergies to disclose the indicators to the local community in a regular way, although it was not a completely neglected issue for the most successful indicator projects. Nevertheless, communication has been mainly internal, lacking external visibility and solid strategies to reach the general public. Consequentely, indicators are ineffective tools to provide key information to raise awareness about sustainability, to inspire behavioural changes and value shifts or to lead to new debates, discussion forums or new participative mechanisms to embrace the challenges of local sustainable development.

- *Fragile involvement of local stakeholders*: participation mechanisms involving external actors were minimal. They were reduced to internal procedures for experts and public officers to discuss about the indicators, which reflects a traditional governmental approach, away from the concept of governance. Broad participation of local actors was not even recognised as an issue. The current lack of approaches targeting bottom-up initiatives does not reflect the recent trend in the literature (and in practice) of cross-fertilisation of approaches. As such, the room for manoeuvre of indicators to challenge new governance networks, to foster new interactions and resource linkages in the community were also fragile or even null, even if local networks are supposed to bring more resources (human and financial), more knowledge and know-how and to facilitate the implementation of

indicators (although with higher demands for coordination and integration).

- *Poor link with other local strategies and goals or other regional or national targets:* indicators have not been contributing directly to the establishment of local goals and targets so far (only in Mora, and at some point Oeiras) and to assume them publicly. Some cases still have to further develop a solid capacity to integrate local strategies in regional ones (since they have not been used to consolidate capacities, efforts and resources for monitoring tasks at the regional level). In addition, effective internal disclosure of the indicator system as a whole is still fragile.

- *Poor regional coordination:* regional coordination is a delicate aspect of almost all sustainability projects analysed, which demonstrates several fragilities on the field. It was possible to observe how tight governmental relationships are in certain areas, not allowing synergies and common efforts towards more harmonized actions at different territorial levels. We also verified how difficult it is to work in intermunicipal partnerships, particularly when issues are not considered strategic (such as sustainability indicators), and how this obstructs policy learning and effective coordination. We concluded that it is still difficult in our country to converge synergies to build intermunicipal or regional indicator systems. Even when several attempts were made to steer regional projects that could benefit from a significant scale economy and from their local know-how, or even when there was the specific possibility to allocate European Funds for the creation of regional information structures, those attempts were considered to be completely under-explored and ineffective. These findings reinforce the importance of the project of Algarve and its uniqueness in the country and praise the efforts of ABAE with the ECOXXI project. Other hindrances undermining this coordination are: lack of interest for sustainability indicators for the majority of the Portuguese municipalities and a cultural deficit of evaluation procedures; rivalry between local councils; lack of political commitment to support regional projects; general malfunctioning of Regional Coordination Agencies; and, the non-existence of administrative regions that could enforce regional coordination for sustainability.

- *Weak connection to similar networks:* almost all of the experiences are developed in relative isolation, strongly focused on the particular context of their city or village (apart from the case of Oporto and Oeiras). Furthermore, few efforts to learn from the participation in or involvement with other national or international networks were undertaken. The capacity to learn from other experiences and the way this learning can steer the role of indicators in local governance has not contributed to increase the legitimacy of projects, nor to establish different working relationships between multiple stakeholders or to develop new innovative decision-making processes. It is also clear that inspiration for these projects was not based on other Portuguese local experiences and that practically no knowledge, know-how and experiences are shared within the country.

8.3. Major Outcomes and Uses of Local Sustainability Indicators (in the case-studies)

The most successful sustainability indicators experiences in the Portuguese local context (Mora, Oporto, Palmela and Oeiras to a certain extent) proved to be key steering processes to improve 'government' capacities for sustainable development, although they still have a long way to go to challenge broader 'governance' settings. The findings of those case-studies provide us crucial lessons to base further work with local sustainability indicators in the country, so they must get our critical attention.

Those experiences have received strong political support and substantial and stable funding, but they were also very much enforced by the attitudes, behaviours, beliefs, motivations and personal involvement of particular actors as well as by their high levels of awareness and training on sustainable development issues. This clearly proves that the way politicians and public officers perceive sustainability indicators (as crucial tools for local sustainable development) influences the indicators room for manoeuvre to bring about change. Their perseverance and dedication enabled them to overcome many problems and obstacles (proclaimed by many as inhibiting any possible initiatives to build and update local indicators) with innovative solutions, with simple and original actions and sometimes with costly procedures to gather data, for instance.

Furthermore, a key factor for the indicators' effective operationalisation was the set up of *coordination teams* composed of local public officers specifically allocated to work with the indicators, with some technical support from external experts. It allowed stabilising routines and procedures to collect and analyse information, to boost the capability to internalise the process in local government and to develop a stronger feeling of ownership among the members of the coordination teams. This way of working was considered as a 'good practice' by many interviewees. In opposition, its non-implementation was recognised as one of the reasons for failure, as we have seen.

Several positive outcomes and uses resulted from the development and institutionalisation of such challenging indicator systems, which integrate complex information from different themes and areas (trying to understand their effects):

- *New information capacities*: even when information was easily available and at low costs before the implementation of the indicator sets, it was scattered through several departments within local councils, or through different governmental and non-governmental agencies that did not cooperate with one another. In addition, without an integrative and transversal system in place, data was collected and analysed several times, in different moments for different purposes and by different people. The development of sustainability indicator sets has improved not only the availability of data, but most importantly it has also brought *new information capacities*, standardised and integrated data collection and analysis procedures and new data for decision-making (although there is little evidence of their use at the highest policy levels, as they are mostly used in lower and technical levels of decision-making).

- *Better organisational structures and stronger horizontal integration*: the development of the

indicators has provided room for new internal working relationships, for more coordinated actions between different departments, and for more integration and coherence between different areas. It has also allowed for new ways of working or networking to evolve, which facilitate planning and decision-making towards sustainable development. This was particularly true when indicators were placed in departments in a strategic organizational position directly dependent on the Mayor. This major outcome gains strategic importance as this particular aspect of sectoral (horizontal) integration is one of the most critical factors of 'good' governance for sustainable development, at the same time that it is also one of the mostly criticised in the Portuguese local governance systems (constantly underlined as a problem in the interviews, in the informal contacts made along the research, in the related literature, etc.).

- *Steering some new networks important for sustainable development*: the project in Oeiras stimulated the improvement of some communication channels with other Portuguese municipalities; in Oporto or Palmela, several informal networks were reinforced with governmental and non-governmental local actors (mainly to supply local data); in Oporto, as well, several international contacts were fostered and the participation in international networks was considered vital for the work with indicators, which are recognised to be complex issues for the local level.

- *Improved perceptions of the potential role of sustainability indicators:* evidence suggests the critical influence of training programmes (such as in Oeiras or Mora) or of the level of awareness and education among public officers (such as in Oeiras, Oporto or Palmela) to boost this positive evolution towards the understanding of indicators as important learning processes for local governments.

Judging from the uses of the indicators in Mora, Oporto, Palmela and Oeiras, it is possible to conclude that when indicators are updated and maintained over time, different uses can be distinguished.

The most recurrent use found is instrumental, which is in accordance with their expert-based top-down approaches. Because the people involved in the indicators' choice and development were also the ones that mostly used them in their daily work, they were able to effectively change procedures, administrative decisions and operational actions. This is probably one of the most important findings of the research, which enables us to argue that, when in place, sustainability indicators can serve several important uses to strengthen local governmental actions towards sustainable development and have more chances to be used by different people with different goals at different times (within local governments).

Conceptual uses, though important, were restricted to very few actors inside the local authority, because of the lack of involvement of other stakeholders. The more stakeholders involved, the higher the probability that the indicators will have multiple uses and users (Hezri and Dovers 2006). Symbolic uses related to symbolic, political or tactical outcomes associated with the indicators were difficult to assess. They were mainly found in some case-studies, in which some politicians somehow supported the indicator projects (mostly in Mora, but also in Palmela and Oporto). Nevertheless, the uses still remain within governmental spheres. There is still much potential to be explored, specially outside local government spheres, in broader governance arrangements.

8.4. The Portuguese Experiences in European Contexts

This part intends to do an interesting exercise for the research goals, trying to summarize and compare the implications of the Portuguese case-studies for core values of good governance for sustainable development and to position them in the general findings of other European experiences analysed in Chapter 4 (see Table 2.1, 4.2 and 8.1).

The oldest experiences in Portugal with local sustainability indicators (our case-studies) have shown that they have not been a significant contribute to strengthen the dialogue between different levels of government, to expand networks or to improve the communication, relationships and participation mechanisms between local communities and actors, and local governments. There has been a tendency to develop and use these indicators to improve the efficiency of local governments with few concerns for the creation of more participatory and inclusive democratic channels and for strengthening transparency of local policies towards sustainable development. The search for more efficiency without concerns for more democracy can weaken the credibility and legitimacy of the indicators and most of all the accountability of local governments to act towards sustainable development.

Table 8.1 – Core values of 'Good Governance' and the implications of developing sustainability indicators at the local level in Europe and in Portugal

Core Values for 'Good' Governance	Crucial theoretical implications for Sustainable Development	Conclusions drawn from the development of local sustainability indicators in Europe	Conclusions drawn from the development of local sustainability indicators in Portugal
Legitimacy	It is necessary to recognise multiple legitimacies: that all actors are able to recognise the legitimacy of other actors and that they are able to negotiate shared legitimacy on a continual basis (from the processes or the outcomes to decision-making)	Legitimacy was mainly obtained from the 'input-side' (involving key people, involving the general public or using scientific and theoretical inputs). Only in few cases legitimacy was obtained from the 'output-side' (through the establishment of concrete achievements of decision-making)	Legitimacy was mainly obtained from the 'input-side' where the role and knowledge of experts and scientific inputs were considered crucial and determinant in all of the case-studies. From the 'output-side' evidence suggests that national and international recognition strengthened the legitimacy of some projects (Mora and Porto)
Efficiency	Continuous evaluation and assessment of policies is necessary, as well as to link goals to tasks and activities (with the associated indicators) for every actor within networks	When the target group was clearly defined, the overall assessment and the system structure was adequately constructed and more chances for efficiency were created. The several experiences clearly show the permanent trade-off between efficiency and democracy values. Funding is a critical issue. Few indicator sets were linked to targets, programmes or plans.	The technical discourse on indicators in the Portuguese context emphasises the efficiency-driven characteristic of those projects, focused on the internal management of local governments. Nevertheless, very few indicators were linked to local targets or goals. Funding and political support were determinant for their (un)success.
Democracy	It is necessary to challenge existing democratic norms and procedures to include more participatory and inclusive procedures	Some cases show that public participation was more complicated then inviting key stakeholders. Furthermore, public participation is still often seen as a synonym of informing the public, whereas no power or responsibilities are allocated to them. Some other cases involved different actors with many different participation mechanisms and broad participation was considered a basic and indispensible feature of the process since the beginning.	Public participation in the choice of indicators was never an issue. Participation mechanisms were scarce and only targeted few local public and non-public organisations (data suppliers). When attention was devoted to the creation of participative driving-force projects, such as LA21 or LEP, it was more difficult to institutionalise and update indicators in a systematic way.
Accountability	It is necessary to find measures to support stronger accountability structures at different territorial levels of action	When a feeling of ownership and commitment from the target group was created, accountability was reinforced. Several cases show that trust among stakeholders was a crucial factor, as well as the transparency of the process.	Accountability was clearly and effectively assigned when there were committed coordination teams with high levels of personal involvement and strong feelings of ownership. Mixed teams were more successful in assigning responsibility for the indicators. But sustainability indicators development and use remain within the modus operandi of a traditional governmental approach. Knowledge is locked within governmental barriers and not widely spread. As such, accountability becomes more fragile at the same time that there is no risk of loosing the discretionary political way of making ad hoc local policies.

Nevertheless, some experiences have demonstrated how they critically challenged and changed local government capacities and did contribute to horizontally shape policy integration with new institutional arrangements across departments, new working routines, new cultures on data collection, analysis and disclosure. Furthermore, it provided a new stimulus to learn about and improve local arrangements for sustainable development, etc. The major challenge remains so in the transposition and dissemination of these effects to the outside of the local government sphere, in order to create more room for sustainability indicators to steer local Portuguese governance towards sustainable development.

8.5. Final Thoughts and Recommendations

Sustainability indicators are expensive, and always imply financial support. They demand large resources and a certain logistic (of human and technical resources) to be continuously maintained and updated. Nevertheless, in our study we found no connection between the development of sustainability indicators and the financial capacity or population dimension of municipalities. In addition, several findings of the research can contribute to demystify this funding argument regarding the non-implementation of indicators (see particularly the funding criterion in Chapter 7). Due to their integrative challenges and complexities, sustainability indicators require political support and vision, perseverance and commitment of public-officers, relevant knowledge and strong communication tools towards their target-groups. Most of all, sustainability indicators are able to generate the type of internal and external debates that may steer some of the most critical and difficult aspects of sustainable development: horizontal and vertical integration of policies. This can be considered as a fourth category of roles for sustainability indicators (see Table 3.2).

We are now able to put forward some general recommendations for more effective outcomes and uses of sustainability indicators in local governance contexts.

The first recommendations are more theoretical in the sense that they propose research lines that could be explored in the future to enforce sustainability indicators in local contexts. The link between motivation and innovation in local governance contexts could be much more explored in the implementation of sustainability indicator processes, with the aim of connecting concepts such as resilience, use and innovation in governance contexts. A more empirical research could target deeper and transversal understandings of projects such as the ECOXXI and their consequences for planning systems and decision-making at the local level. Other particularly important research line would be the study of the creation and institutionalisation of social indicators at the local level. With the experience of the Social Network programme several efforts are in motion to gather social data, which is not only difficult to collect and analyse, but also vital for a better understanding of sustainable development problems. Furthermore, social indicators have been inserted in broad participative strategies, including a variety of actors, which may indicate (or not) a variety of potential users. In Chapter 4 it was shown how the findings of the questionnaire pointed out that there have been a considerable number of these experiences in the country. It could be very interesting to further understand the development and use of social indicators at the local level and further explore the issue of power and tension among users.

The second and final recommendation is a practical one, which not only embodies theoretical-inspired thoughts, but also possible but challenging (not to say utopian!) normative insights. Given

the very poor exchange of knowledge and know-how of local experiences related to sustainability indicators within the national territory, building a sound national *knowledge-transfer platform* would be a great challenge. This transversal platform would be a way of connecting all the activities and actions regarding sustainability indicators in the country. In addition, it could join several organizations, such as universities, non-governmental organizations and governmental bodies at different territorial levels, which could promote awareness about the importance of developing those sets for the local context. Although no further recommendations are intended regarding its composition, according to the findings of this research, we believe that INE would be a valuable asset to this platform. This Institute can play a particularly important role as a key (technical) actor in conferring more credibility and legitimacy to the indicators (also considering its progresses in urban statistics), in contributing to understand and minimise methodological challenges raised by the indicators and in improving relationships of trust with local organizations.

Among the many possible roles and contributions of such a platform, the following possible ideas should be highlighted:

- To have a particular and crucial role as *training*-provider in order to raise awareness of local leaders (and consequently, to foster local political commitment to these initiatives), practitioners and local communities regarding the importance of developing indicators;
- To develop *guidelines*, not with the aim of providing blueprint approaches but to support the different processes of developing and updating indicators at the local level;
- To help finding *financial* support and innovative solutions in order to demystify the funding problem, particularly in a time of strong budget cuts in public and non-public organisations;
- To *share* best practices and experiences and provide opportunities to *learn* from other projects within the country;
- To improve the *communication with society*, to promote regular debates with many different target groups about sustainability paths, about the indicators themselves or about the way they may challenge the management of transversal information;
- To facilitate the *harmonization* of local indicators at the national and international level, and to enable *comparisons* between municipalities at different territorial levels.
- To facilitate the use of sustainability indicator sets to *keep alive* LA21 strategies and foster their implementation (considering their poor follow-up procedures).

In short, it is possible to create dynamic indicator processes as alternative pathways to improve the capability of cities to deal with the complexities of sustainable development. We hope that this thesis helps to 'write a new music' about the role of local sustainability indicators in Portuguese cities and villages. Sustainability indicators need to be understood by public-officers, policy-makers and academics as more than mere technical tools. They should be understood as processes that are able to induce change in governance towards sustainable development. A brighter future for sustainable development may be secured, if indicators are perceived as ongoing learning processes that may guide us through all the uncertainties, complexities and diversity of social transformation.

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LIST OF APPENDICES

APPENDIX I

Questionnaire applied to the Portuguese Municipalities
regarding Local Sustainability Indicators

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Inquérito às Câmaras Municipais sobre
Sistemas de Indicadores Locais para o Desenvolvimento Sustentável

Câmara Municipal de _____ Data_____
Responsável para contacto futuro:
Nome_____Funções _____
E.mail _____ Tel. _____

1. Que tipo(s) de Sistema de Indicadores existe(m) no Município?	**Sim**	**Não**
Qualidade de Vida _____	☐	☐
Ambientais _____	☐	☐
Sociais _____	☐	☐
Económicos _____	☐	☐
Desenvolvimento Sustentável (Ambientais, Sociais, Económicos, Institucionais) _____	☐	☐
Outro(s) (especifique caso disponham de Sistemas de Indicadores independentes para cada área ou sector particular):_____	☐	☐

Se respondeu NÃO a todas as alíneas da pergunta anterior, o inquérito termina aqui.
Obrigada pela colaboração!

2. Data(s) do seu estabelecimento (mês/ano):
_____/_____

3. Que temas são retratados nesse Sistema de Indicadores:

Saúde _____	☐
Criminalidade _____	☐
Pobreza _____	☐
População _____	☐
Emprego, Rendimento e Consumo_____	☐
Actividades Económicas _____	☐
Educação e Formação_____	☐
Participação e Cultura_____	☐
Justiça e Integração _____	☐
Instituições_____	☐
Ar, Água ou Resíduos_____	☐
Energia _____	☐
Conservação da Natureza _____	☐
Espaços Verdes _____	☐
Ambiente Urbano _____	☐
Transportes e Mobilidade _____	☐
Ordenamento do território _____	☐
Floresta _____	☐
Outros (especifique)_____	☐

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4. A implementação do Sistema de Indicadores decorreu de:

Implementação de uma Agenda 21 Local _____ ☐
Elaboração de um Plano Municipal de Ambiente _____ ☐
Elaboração de um Plano/Estratégia Municipal (especifique): _____ ☐
Implementação de Sistema de Gestão Ambiental _____ ☐
Implementação de Sistema de Gestão da Qualidade _____ ☐
Participação na Rede Social _____ ☐
Candidatura ao Programa ECOXXI _____ ☐
Utilização dos *Indicadores Comuns Europeus* _____ ☐
Envolvimento em Projectos da União Europeia (especifique)_____ ☐
Outro(s) (especifique): _____ ☐

5. O Sistema de Indicadores está a ser alimentado com regularidade?

Sim _____ ☐
Não _____ ☐ Data da última actualização _____

5.1. Se SIM, qual a frequência na recolha de dados:

Mensal _____ ☐
Várias vezes ao ano _____ ☐
Anual _____ ☐
Outra (especifique): _____ ☐

6. Assinale quais os objectivos principais (traçados e alcançados) para o estabelecimento do Sistema de Indicadores:

	Traçados	Alcançados	Por Alcançar
Avaliação de condições actuais do município (diagnóstico)	☐	☐	☐
Monitorização de um Plano/Estratégia	☐	☐	☐
Apoio ao planeamento e à tomada de decisões	☐	☐	☐
Resposta a imperativos legais	☐	☐	☐
Estabelecimento de comparações (espaciais/temporais)	☐	☐	☐
Alteração da distribuição de recursos numa dada política	☐	☐	☐
Oportunidade para envolver diferentes actores em conjunto	☐	☐	☐
Educação e aumento da consciencialização dos problemas ambientais/sociais	☐	☐	☐
Operacionalização do conceito de Desenvolvimento Sustentável a nível local	☐	☐	☐
Comunicação/Disseminação de informação para a população	☐	☐	☐
Estabelecimento de novas formas de trabalho na Câmara Municipal	☐	☐	☐
Orientação da atenção política para determinado(s) assunto (s)	☐	☐	☐
Forum para discussões alargadas	☐	☐	☐
Outro(s) (especifique)	☐	☐	☐

7. A quem pertence a responsabilidade da operacionalização e manutenção do Sistema:

Um técnico _____ ☐
Um departamento (especifique)_____ ☐
Uma equipa multi-departamental (especifique) _____ ☐
Outro (especifique) _____ ☐

8. Quais as principais fontes de informação para os Indicadores?

Município _____ ☐
INE_____ ☐
Organismos Públicos _____ ☐
Organismos Privados e/ou Não-Governamentais _____ ☐
Comunicação Social _____ ☐
Outra(s) (especifique) _____ ☐

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9. Quem é o público-alvo desse Sistema de Indicadores?

Técnicos da Câmara Municipal _____ ☐
Decisores Políticos Locais _____ ☐
População em geral _____ ☐
Determinados Sectores da Sociedade (agentes económicos, culturais, etc.)_____ ☐
Outros (especifique): _____ ☐

10. De que forma são divulgados os Indicadores?

Intranet _____ ☐
Site da Câmara Municipal_____ ☐
Relatórios/Publicações (versão papel) _____ ☐
Comunicação Social _____ ☐
Outra(s) (especifique) _____ ☐

Muito obrigada pela colaboração!

Agradecemos o envio do Inquérito ao Cuidado de Dra. Sara Moreno Pires (966602315):
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Universidade de Aveiro, 3810-193 Aveiro, Tel 234 370 349, Fax 234 370 309
Ou por e.mail para: sarapires@ua.pt

APPENDIX II

List of the Interviews

Table II - List of the Interviews

Name	Position	Case-study	Date
Alexandre Varela	Public Officer	Redondo	08/03/27
Pedro Roma	Citizen	Redondo	08/03/27
António Recto	Politician	Redondo	08/03/27
Alfredo Barroso	Politician	Redondo	08/03/27
Carlos Moreira	Consultant/Expert	Redondo	08/03/16
Miguel Torres	ENGO	Mindelo	08/07/26
António Pontes	Politician	Mindelo	08/07/26
Albino Igreja	Politician	Mindelo	08/07/27
Joaquim Pontes	Public Officer	Mindelo	08/07/01
Pedro Macedo	ENGO	Mindelo	08/04/24
Nuno Barros	Local Company	Mindelo	08/07/25
Miguel Coutinho	Consultant/Expert	Mindelo	08/12/05
Acílio Vitória	Public Officer	Aveiro	08/10/23
Fernando Almeida	Public Officer	Aveiro	08/10/23
Capão Filipe	Politician	Aveiro	08/11/06
Miguel Coutinho	Consultant/Expert	Aveiro	08/12/05
José Sinogas	Politician	Mora	08/04/03
Marco Pires	Politician	Mora	08/04/03
Irina Simões	Public Officer	Mora	08/04/03
Ângela Catarina	Public Officer	Mora	08/04/03
Aníbal Lopes	Employee	Mora	08/04/03
Cristina Garret	Public Officer	Oeiras	08/06/26
Sofia Gomes	Public Officer	Oeiras	08/06/26
Paulo Vistas	Politician	Oeiras	09/01/30
Margarida Gomes/Tânia	ENGO	Oeiras	08/07/01
Isabel Martins	Public Officer	Porto	08/10/16
Luís Delfim Santos	Consultant/Expert	Porto	08/10/16
Alexandra Rodrigues	INE	Porto	09/02/06
Ana Paula Ruas	Public Officer	Palmela	09/06/19
Sónia Martins	Public Officer	Palmela	09/06/19

APPENDIX III

Interview Questions

Interview questions to politicians

1- Quais os problemas gerais do município que merecem mais atenção para o desenvolvimento sustentável e principais obstáculos na sua correcção?
2- Que medidas inovadoras o município tem tomado para o desenvolvimento sustentável?
3- Está a par do sistema de indicadores proposto no município? De que forma considera que esse sistema de informação pode ajudar a alcançar um desenvolvimento sustentável?
4- Qual foi o principal objectivo para a criação do sistema de indicadores?
5- Quem é o público-alvo desse sistema?
6- Que papel teve/tem no trabalho desenvolvido com o sistema de indicadores?
7- Como avalia a utilidade/importância deste instrumento para a governação local?
8- Considera ter sido importante a participação pública na definição e implementação dos indicadores? Pode exemplificar casos que tenham ocorrido no município?
9 - O que considera ser um 'bom' indicador? Pode especificar quais considera ser as suas características principais e porquê?
10- Qual a influência regional ou europeia no sistema de indicadores adoptado pelo município?
11 - Como avalia a influência do governo central/ANM nestas questões? E do SIDS nacional?
12- De que forma os indicadores são alimentados e divulgados? Com que periodicidade?
13- Utiliza a informação dos indicadores na sua governação? De que forma? É possível identificar situações em que isso tenha acontecido?
14 - Que outro tipo de informação considera útil para as políticas de DS do município? Qual a que mais utiliza?
15- Tem sentido necessidade de utilizar mais informação (por imposição legal ou outra) na tomada de decisões?
16- Considera o sistema de informação como consolidado no município? Que resultados lhe atribui (ex: aumento da consciência ambiental no município ou na população, influência nas decisões ou avaliações de projectos, aumento da interacção do município com outros actores, outros resultados visíveis mas difíceis de mensurar, etc.)?
17- Principais dificuldades na implementação do sistema e medidas (e interesse) para as ultrapassar?

Interview questions to public officers

1 - Qual foi o principal objectivo para a criação do sistema de indicadores?
2- De quem partiu a iniciativa e porquê?
3- Que papel teve/tem no trabalho desenvolvido com os indicadores?
4- Como se desenrolou o processo de definição dos indicadores?
5- Quem esteve envolvido na criação do sistema de indicadores? De que forma foram envolvidos os diversos sectores? E entidades externas?
6- Quem é o público-alvo desse sistema?
7- De que forma são os indicadores alimentados e divulgados (internamente, externamente)? Com que periodicidade? A que departamento pertence a responsabilidade?
8- Utiliza a informação dos indicadores no seu trabalho? De que forma? É possível identificar situações em que isso tenha acontecido? (Metas/objectivos/planos e decisões ligados a esses indicadores)
9- De que forma foi o projecto financiado (recursos humanos e financeiros) e quais os custos que representou e representa?
10- Que importância atribui à participação pública na construção dos indicadores?
11- O que considera ser um 'bom' indicador? Pode especificar quais considera ser as suas características principais?
12- Têm tido apoio político nas iniciativas ligadas aos indicadores? Qual o nível de compromisso do Presidente da Câmara?
13- Tiveram alguma influência de outras experiências regionais ou europeias ao desenvolver o sistema de indicadores?
14- Como avalia a influência do governo central/ANM nestas questões? E do SIDS nacional?
15 – Qual o papel que o INE tem ou poderia ter nesta questão?
16- Considera essa informação como consolidada no município? Mesmo que não, que resultados atribui à sua construção? (ex: aumento da consciência ambiental no município ou na população, influência nas decisões ou avaliações de projectos, aumento da interacção do município com outros actores, outros resultados visíveis mas difíceis de mensurar, etc.)?
17 - Como avalia a utilidade/importância deste instrumento para a governação local?
18 - Principais dificuldades na implementação do sistema e medidas para as ultrapassar?

APPENDIX IV

Sustainability Indicator System of Redondo

Table IV.1- Process Indicators to monitor the actions of the LA21 Action Plan

Tipo Indicadores	Acção	Indicador
Indicadores de Processo - Monitorização das Acções Previstas no Plano da AL21R	Gabinete de Promoção Económica (7 Indicadores)	PIB_{pc} Municipal VABpc Municipal Produções Agrícolas (em área, tonelagem e valor): vinho, azeite, outras N.º de estabelecimentos comerciais N.º de acções e formandos de formação profissional N.º de "horas x formandos" de formação profissional N.º de feiras e exposições levadas a cabo no concelho e/ou participadas por empresas de Redondo
	Gabinete de Promoção e Dinamização Cultural (6 Indicadores)	N.º de acções culturais levadas a cabo no concelho N.º de espectadores/participantes nas acções culturais Verbas concedidas pela Câmara Municipal para eventos culturais N.º de eventos desportivos realizados no concelho N.º de participantes em eventos desportivo actividade N.º de modalidades desportivas em actividade
	Gabinete de Apoio ao Munícipe (4 Indicadores)	N.º de pessoas atendidas N.º de reuniões descentralizadas N.º de informações transmitidas N.º de casos resolvidos
	Concepção da Imagem/Marca Redondo (1 Indicador)	N.º de produtos abrangidos pela marca
	Concepção de uma Campanha de Promoção do Concelho (4 Indicadores)	N.º de acções relevantes N.º de entidades envolvidas Volume de vendas e/ou encomendas/acção promocional N.º de turistas visitantes
	Revitalização Turística das Vilas e Aldeias (3 Indicadores)	N.º de turistas visitantes N.º de turistas visitantes das aldeias km de percursos pedonais criados
	Revitalização e Promoção das Actividades Artesanais (4 Indicadores)	Volume de negócios do artesanato local N.º de estabelecimentos / unidades produtivas N.º de artesãos/acção promocional N.º trabalhadores/unidade produtiva
	Promoção de um Evento Cultural Anual, de Dimensão Nacional (1 Indicador)	N.º de espectadores/iniciativa/ano
	Planeamento do Trânsito, Definição e Implementação de Áreas Pedonais em Redondo (3 Indicadores)	N.º de viaturas que passam nas principais vias do centro da Vila de Redondo N.º de lugares de estacionamento para viaturas N.º de metros de corredores pedonais
	Criação da Comissão Verde (6 Indicadores)	Volume/peso da recolha selectiva dos resíduos sólidos urbanos (RSU) N.º de acções de fiscalização ambiental Valor de coimas e n.º de autos N.º de acções de sensibilização ambiental N.º de pessoas abrangidas pelas acções de sensibilização ambiental (adultos e crianças) N.º de ecopontos domésticos distribuídos
	Diversificação do Quadro Energético do Concelho (2 Indicadores)	% energia alternativa produzida no concelho relativamente ao consumo total na mesma área de exploração Consumo de energia do município
	Preservação da Natureza e do Ambiente para uma Melhor Qualidade de Vida (6 Indicadores)	N.º de espécies autóctones N.º de locais de interesse ambiental N.º de metros de linhas de água limpas Análises à água para consumo humano Análises ao ar nos principais centros urbanos N.º de parceiros a assinar o "contrato de gestão" dos recursos hídricos
	Plano de Monitorização Ambiental (1 Indicador)	N.º de indicadores tratados
	Desenvolvimento de Iniciativas Inter-Geracionais (2 Indicadores)	N.º de acções intergeracionais N.º de participantes
	Reforço da Rede de Apoio ao Cidadão (3 Indicadores)	N.º de visitas domiciliarias (por objectivo) N.º de passageiros transportados Idade média dos idosos nos lares
	Criação de um Núcleo de Apoio aos Emigrantes e Minorias Étnicas (4 Indicadores)	N.º de imigrantes a residir no concelho N.º de imigrantes apoiados/N.º total de imigrantes N.º de acções de formação destinadas a imigrantes N.º de participantes nas acções de formação
	Reforço do Associativismo (3 Indicadores)	N.º de associações N.º de parcerias entre associações Valor do apoio camarário às associações do concelho
	Infra-Estruturas de Apoio ao Desenvolvimento Económico (1 Indicador)	N.º de potenciais lotes a criar Anual CMR
	Acessibilidades, Habitação e Transporte (5 Indicadores)	N.º de fogos de habitação social N.º de fogos recuperados no Centro Histórico de Redondo N.º de participantes N.º de sessões da Comissão N.º de propostas por tipo de proponente
	Promoção da Saúde (3 Indicadores)	N.º de acções de sensibilização de cuidados primários de saúde N.º de participantes % doentes do Centro de Saúde que são obrigados a deslocação a Évora (para exames e/ou tratamentos)
	Assembleia 21 - Fórum Cívico Concelhio (3 Indicadores)	N.º de sessões do Fórum N.º de participantes N.º de propostas por tipo de proponente
	Comissão de Comércio, Turismo, Indústria e Artesanato (3 Indicadores)	N.º de sessões da Comissão N.º de participantes N.º de propostas por tipo de proponente
	Comissão de Educação, Sociocultura, Colectividades, Saúde, Desporto, 3ª Idade e Jovens (3 Indicadores)	N.º de sessões da Comissão N.º de participantes N.º de propostas por tipo de proponente
	Comissão de Agricultura, Agropecuária e Agro-indústria (3 Indicadores)	N.º de sessões da Comissão N.º de participantes N.º de propostas por tipo de proponente
	Comissão Estratégica AL21 (3 Indicadores)	N.º de sessões da Comissão N.º de participantes N.º de propostas por tipo de proponente

Table IV.2 - Indicators to monitor the implementation of the LA21 Action Plan and its global performance level

Tipo Indicadores	Indicador
Monitorização do Plano de Acção	**1. Indicador Anual de Realização Total** N.º de acções totalmente realizadas /N.º de acções previstas no Plano * 100
	2. Indicador Anual de Realização Parcial N.º de acções total ou parcialmente realizadas / N.º de acções previstas no Plano * 100
	3. Indicador Anual de Envolvimento de Entidades (%) N.º de entidades já envolvidas nas tarefas do Plano / N.º Total de entidades cujo envolvimento foi previsto * 100
	4. Indicador Anual de Orçamentação Global (%) Valor orçamentado pelas entidades envolvidas / Valor Total do Plano de Acção * 100
	5. Indicador Anual de Realização Financeira (%) Valor da Realização total ou parcial das acções / Valor Total do Plano de Acção * 100

Table IV.3 - Sustainable Development Indicators of the LA21 to assess the level of "change" towards sustainable development

Grande Área	Área	Indicador
Território (4 Indicadores)		Temperatura média anual do ar (ºC) Disponibilidades hídricas (caudal m3/dia) Uso do solo Precipitação média anual (mm)
População e condições Sociais (37 Indicadores)	**Demografia (9 Indicadores)**	Densidade populacional (hab/km2) População residente com menos de 15 anos (% do total) População residente com menos idades entre os 15-64 anos (% do total) População residente com 65 e + anos (% do total) Taxa de Natalidade (‰) Taxa de Mortalidade (‰) Indice de Envelhecimento (%) Índice de dependência de jovens (%) Índice de dependência de idosos (%)
	Educação (4 Indicadores)	Taxa de analfabetismo (%) Residentes que completaram o ensino secundário, em relação à população total (%) Residentes que completaram o ensino superior, em relação à população total (%) Taxa de abandono escolar (%)
	Saúde (6 Indicadores)	Taxa média de mortalidade infantil (%) Médicos por 1000 habitantes (%) Consultas por habitante (%) Pessoal médico ao serviço Pessoal de enfermagem ao serviço N.º total de Farmácias
	Acção Social (8 Indicadores)	N.º total de beneficiários do RMG N.º total de pensionistas N.º total de beneficiários de prestações de desemprego Taxa de cobertura de pré-escolar (%) Taxa de cobertura de ATL (%) Taxa de cobertura de creches (%) Taxa de cobertura de lares de idosos (%) Taxa de cobertura de centros de dia (%)
	Habitação (5 Indicadores)	N.º de edifícios por ano de construção N.º de alojamentos vagos no total dos alojamentos clássicos N.º de alojamentos de uso sazonal no total dos alojamentos clássicos N.º total de obras concluídas N.º total de licenças concedidas para construção de edifícios
	Segurança Pública (1 Indicador)	N.º de equipamentos de ordem pública (posto GNR/PSP)
	Participação Eleitoral (4 Indicadores)	Taxa de abstenção nas eleições locais (%) Taxa de abstenção nas eleições presidenciais (%) Taxa de abstenção nas eleições legislativas (%) Taxa de abstenção nas eleições para o Parlamento Europeu (%)
Ambiente e Energia (13 Indicadores)		Caudal superficial tratado (m3) em % do total captado Aguas residuais (% da população servida por sistema de drenagem e tratamento de águas residuais) Consumo de água a nível residencial e serviços (milhares de m3) Consumo de água em indústria (milhares de m3) Caudal efluente produzido (milhares de m3) Caudal efluente tratado (m3) em % do total produzido População servida por sistemas de recolha de resíduos (%) Resíduos urbanos recolhidos segundo processo selectivo (%) Area ardida por ocorrência de fogos florestais (ha) Despesas municipais segundo os domínios de gestão e protecção do ambiente (milhares de €) N.º de consumidores de electricidade Caudal superficial tratado (m3) em % do total captado Consumo doméstico de energia eléctrica (kWh/hab) Consumo total de energia eléctrica (kWh/hab)
Actividade Económica (17 Indicadores)	**Economia (9 Indicadores)**	Taxa de actividade (%) Taxa de desemprego (%) População activa no sector primário em relação ao total dos activos (%) População activa no sector secundário em relação ao total dos activos (%) População activa no sector terciário em relação ao total dos activos (%) N.º total de empresas do sector primário (empresas em nome individual e sociedades) N.º total de empresas do sector secundário (empresas em nome individual e sociedades) N.º total de empresas do sector terciário (empresas em nome individual e sociedades) Volume de venda na indústria transformadora
	Turismo (4 Indicadores)	N.º de camas dos estabelecimentos hoteleiros N.º de dormidas em estabelecimentos hoteleiros Taxa de ocupação dos estabelecimentos hoteleiros Estada média em estabelecimentos hoteleiros
	Transportes e movimentos pendulares (4 Indicadores)	Venda de combustível (gasolina s/ chumbo 95) em toneladas Venda de combustível (gasolina s/ chumbo 98) em toneladas Venda de combustível (gasóleo) em toneladas Taxa de motorização (veículos/1000 hab)

Table IV.4 - European Common Indicators to provide objective and comparable information all over Europe

Tipo Indicadores	Indicador
Indicadores Comuns Europeus (10 Indicadores)	Satisfação do cidadão com a comunidade local
	Contribuição local para as alterações climáticas globais
	Mobilidade local e transporte de passageiros
	Existência de zonas verdes públicas e de serviços locais
	Qualidade do ar na localidade
	Deslocação das crianças entre a casa e a escola
	Gestão sustentável da autoridade local e das empresas locais
	Poluição sonora
	Utilização sustentável de solos
	Produtos que promovem a sustentabilidade

APPENDIX V

Sustainability Indicator System of Mindelo

Table V – Sustainability Indicator System of Mindelo

Eixos de Intervenção	Indicador
Água	Qualidade da água dos poços (Número de análises superiores ao VMA4)
	Qualidade das linhas de água (Ribeira de Silvares)
	Qualidade da água do mar
	Número de vacarias que obedecem às boas práticas agrárias
Ordenamento do Território e Qualidade de Vida	Número de licenciamentos com critérios ambientais integrados
	Satisfação dos Mindelenses com a comunidade local
	Evolução da qualidade de vida (5 anos)
	Envolvimento da população local nos processos de participação pública
	Número de ciclistas
Biodiversidade e Paisagem Rural	Modos de transporte mais utilizados
	Nova classificação da ROM
	Número de produtores de agricultura sustentável
Resíduos Sólidos Urbanos	Consumo de produtos locais
	Taxa de utilização dos ecopontos
	Número de famílias que efectuam a compostagem caseira
	Número de participantes em acções de formação/sensibilização
	Número de participantes para a “família mais sustentável"
	Número de participantes na “Acção Agenda 21 Local"

APPENDIX VI

Sustainability Indicator System of Aveiro

Table VI - Sustainability Indicator System of Aveiro

Área	Sub-Área	Indicador
Indicadores Ambientais (43 Indicadores)	**Energia**	IA-E1 (=E10 do SIDS) (*): Consumo de energia (total; por sectores de actividade; iluminação pública) IA-E2 (=E11 do SIDS): Consumo de energias renováveis IA-E3: n.º (%) de projectos com adopção de soluções de eco-eficiência energética
	Mobilidade	IA-M1: utilizadores do sistema de transportes públicos e intermodalidades (n.º e %) IA-M2: grau de satisfação dos utentes IA-M3 (=E15 do SIDS): Idade média dos veículos IA-M4 (=E16 do SIDS): Veículos em circulação IA-M5(=E17 do SIDS) : Transporte de passageiros, por modo de transporte IA-M6(=E18 do SIDS: Intensidade de Tráfego IA-M7 (=E22 do SIDS): acidentes rodoviários IA-M9: veículos com motorizações ecológicas (gás natural, electricidade, hidrogénio) IA-M10: Extensão de corredores cicláveis e pedonais (Km)
	Espaço Natural	IA-N1: população servida com espaço verde de usufruição pública a menos de 300 metros IA-N2: Área de espaços verdes de usufruição pública per capita (m2) IA-N3: corredores ecológicos existentes, ou em fase de reabilitação (metros lineares) IA-N4: Área da estrutura ecológica urbana IA-N5 (=A39 do SIDS): Área de solo agrícola irrigado IA-N6 (=A40 do SIDS): Consumo/utilização de pesticidas agrícolas IA-N7 (=A41 do SIDS): Consumo/utilização de fertilizantes agrícolas comerciais IA-N8 (=A16 do SIDS): qualidade de água em zonas balneares IA-N9: árvores doentes ou debilitadas substituídas (n.º e %) IA-N10: n.º e % de árvores por grau de prioridade de intervenção (risco ou tipo de operação de manutenção) IA-N11: grau de manutenção dos espaços verdes (homens/hora; n.º e tipo de intervenções) IA-N12: quantidade de água gasta na rega dos espaços verdes (m3)
	Qualidade de parâmetros ambientais	IA-QP1 (=A08 do SIDS): qualidade do ar IA-QP2 (=A01 do SIDS): estimativa das emissões de gases com efeito de estufa: CO2, NOx e CH4 IA-QP3 (=A70 do SIDS): população afectada por ruído ambiente exterior IA-QP4 (=A71 do SIDS): medidas de minimização de ruído IA-QP5: n.º de reclamações por incomodidade sonora IA-QP6 (=A62 do SIDS): produção de resíduos IA-QP7: n.º equipamento e infra-estruturas para deposição diferenciada de resíduos (por 500 hab) IA-QP8 (=A66 do SIDS): valorização e reutilização por classe de resíduo IA-QP9 (=A24 do SIDS): Captação de água subterrânea e superficial IA-QP10 (=A25 do SIDS): consumo de água IA-QP11 (=A31 do SIDS): produção de águas residuais IA-QP12 (=A32 do SIDS): População servida por sistemas de drenagem e tratamento de águas residuais domésticas IA-QP13: Descargas pontuais de efluentes sem tratamento em linhas de água In(formação) Ambiental
	In(formação) ambiental	IA-I1: população escolar envolvida em programas e acções de educação ambiental base nos mesmos IA-I3: n.º acções e projectos desenvolvidos por área ou temática ambiental IA-I4: n.º de reclamações / sugestões IA-I5: Grau de participação (cidadania) em acções de voluntariado e actos de consulta pública sobre questões ambientais IA-I6: Estudo de opinião: Grau de satisfação do cidadão residente em termos de ambiente e qualidade de vida
Indicadores Sociais (31 Indicadores)	**Acção Social**	IS-S1 (=S02 do SIDS): Taxa de natalidade IS-S2: Famílias ou Indivíduos a viver abaixo do limiar da pobreza (n.º e %) IS-S3: (=S19 do SIDS): Índice de criminalidade IS-S4: (=S20 do SIDS): Condenados em processos crime com menos de 20 anos de idade IS-S5: (=S21 do SIDS): Reclusos IS-S6: Utentes activos dos CAT IS-S7: (=S15 do SIDS): Beneficiários da Segurança Social de todos os regimes e pensionistas IS-S8 (=S16 do SIDS): Estrutura de emprego por sectores IS-S9 (=S17 do SIDS): Taxa de desemprego
	Educação	IS-E1 (inclui S12 do SIDS: população que completou o ensino secundário): População escolar (por faixa etária e nível de ensino, taxas: escolaridade obrigatória, ensino especial, ensino recorrente, minorias étnicas e emigrantes, população com ensino secundário, técnico-profissional e universitário concluídos) IS-E2 (=S18 do SIDS): Bibliotecas públicas e utilizadores IS-E3: (=S11 do SIDS): Taxa de analfabetismo IS-E4: Taxa de abandono escolar IS-E5: Taxa de sucesso no Ensino Regular IS-E6: Taxa de sucesso no Ensino Recorrente IS-E7: Taxa de inserção no mercado de trabalho dos alunos dos cursos tecnológicos e universitários
	Desporto	IS-D1: Taxa de procura dos equipamentos desportivos IS-D2: Quantidade das instalações desportivas existentes (por 1.000 habitantes) IS-D3: Tipologia e qualidade das instalações desportivas (n.º e % instalações novas, instalações certificadas) IS-D4: Actividade desportiva (n.º e % de praticantes nas escolas, prática regular na população activa, federada, grupos especiais com actividades direccionadas)
	Património	IS-P1: Imóveis de interesse Nacional e Público (classificados, em vias de classificação, Zona de protecção e Zonas Especiais de Protecção); IS-P2: N.º de edifícios e estado de conservação (por tipologia: religioso/civil, privado/público; por corrente arquitectónica); IS-P3: Diagnósticos socioculturais/qualidade de vida;
	Habitação Social	IS-H1: N.º de famílias elegíveis para realojamento IS-H2: N.º de habitações degradadas, por freguesia IS-H3: Nº de pessoas sem alojamento (sem abrigo)
	Juventude	IS-J1: Caracterização sócio-demográfica (género, idade, escolaridade, nível de instrução, ocupação profissional, residência, rendimentos). IS-J2: Estudos de opinião: Atitudes, valores e motivações (grau de satisfação profissional, atitudes perante questões como aborto, droga, religião, política). IS-J3: Estudos de opinião: Comportamentos, hábitos e estilos de vida (posicionamentos ao nível da religião, associativismo, hábitos de consumo, prática desportiva, ocupação e lazer, entre outros). IS-J4: Apoios e acções direccionadas aos jovens, associativismo, e projectos específicos (taxa de frequência da CMJ, serviços mais procurados,...). IS-J5: Taxa de frequência por serviço disponibilizado ou actividade (n.º de escolas abrangidas, n.º de jovens inscritos, % média de participação por actividade, entre outros). de voluntariado e actos de consulta pública sobre questões ambientais

APPENDIX VII

Sustainability Indicator System of Oeiras

Table VII - Sustainability Indicator System of Oeiras

Sector	Indicador
Ed.Ambiental/EDS	1.Promoção da Educação Ambiental /EDS por iniciativa do município
	2. Educação Ambiental - Programas FEE: Eco-Escolas+JRA
Ed.Ambiental/EDS; Ambiente Marinho e Costeiro	3. Implementação da Campanha Bandeira Azul
Instituições	4. Agenda 21 Local e Participação
	5. Informação disponível aos munícipes
	6. Emprego na Área de Ambiente
	7. Cooperação com a Sociedade Civil
	8. Certificação em Sistemas de Gestão de Qualidade
Conservação da Natureza	9. Áreas Classificadas
	10. Conservação da Natureza, Biodiversidade e Paisagem
Conservação da Natureza; Floresta	11. Gestão e Conservação da Floresta
Ordenamento do Território	12. Ordenamento do Território e ambiente urbano
Ar	13. Qualidade do Ar e Informação ao Público
Água	14. Qualidade da Água para Consumo Humano
	15. População Servida por Sistemas de Abastecimento de Água
	16. Pop. servida por sistemas de drenagem e tratamento de águas residuais
Resíduos	17. Produção e Recolha Selectiva de Resíduos Sólidos Urbanos
	18. Valorização de Resíduos Sólidos Urbanos
Energia	19. Valorização do Papel da Eficiência Energética na Gestão Municipal
Transportes	20. Mobilidade Sustentável
Ruído	21. Qualidade do Ambiente Sonoro
Agricultura	22. Agricultura Sustentável
Turismo	23. Turismo Sustentável

APPENDIX VIII

Sustainability Indicator System of Oporto

Table VIII - Sustainability Indicator System of Oporto

Grandes Domínios	Área Temática	Indicador
Condições Ambientais (9 indicadores)	**Espaços Verdes**	Espaços verdes públicos per capita Extensão de ruas arborizadas
	Clima	Dias com registo de precipitação Média diária de horas de sol
	Ruído	Incomodidade sonora
	Qualidade do Ar	Dias com Índice da QA, Bom ou Muito Bom
	Qualidade da Água Balnear	Registos com qualidade da água balnear Boa
	Infra-estruturas Básicas	Águas residuais tratadas Resíduos sólidos urbanos valorizáveis
Condições Materiais Colectivas (22 indicadores)	**Equipamentos Culturais**	Bibliotecas de acesso ao público por 1000 habitantes Galerias de arte por 1000 habitantes Museus por 1000 habitantes
	Equipamentos Desportivos	Pavilhões por 1000 habitantes Piscinas por 1000 habitantes Outras instalações desportivas por 1000 habitantes
	Equipamentos Educativos	Estabelecimentos do ensino básico e secundário por 1000 habitantes Computadores no ensino básico e secundário por 100 alunos
	Equipamentos Sociais e de Saúde	Capacidade dos jardins de infância por 1000 habitantes Capacidade das creches por 1000 habitantes Capacidade dos lares, centros de dia e apoio domiciliário por 1000 habitantes Camas de hospitais por 1000 habitantes Centros de saúde e extensões por 1000 habitantes Médicos por 1000 habitantes
	Património	Imóveis de interesse Nacional e Público Espaço público requalificado
	Mobilidade	Velocidade média em transporte individual Velocidade média em transporte público Lugares em parques de estacionamento
	Comércio e Serviços	Estabelecimentos de comércio a retalho por 1000 habitantes Serviços de apoio à população por 1000 habitantes Hotéis e restaurantes por 1000 habitantes
Condições Económicas (17 indicadores)	**Rendimento e Consumo**	Remuneração média mensal (ganho) Quociente entre os percentis 80 e 20 da remuneração média mensal (ganho) Pensionistas por invalidez e sobrevivência por 1000 habitantes Beneficiários do rendimento social por 1000 habitantes Levantamentos multibanco Automóveis ligeiros por 1000 habitantes Lares com acesso à internet
	Mercado de Trabalho	Postos de trabalho por 1000 habitantes Dirigentes e trabalhadores com qualificação média e superior Desempregados inscritos nos Centros de Emprego
	Mercado de Habitação	Custo médio de aquisição Custo médio de arrendamento Licenças emitidas de reconstrução
	Dinamismo Económico	Variação anual do número de estabelecimentos Vendas de combustíveis Despesa total do Município por 1000 habitantes Passageiros em voos comerciais
Sociedade (20 indicadores)	**População**	Nados-vivos por 1000 habitantes Estrangeiros residentes
	Educação	Alunos no ensino superior Alunos em pós-graduações e mestrados Taxa de retenção e de abandono (substituição da taxa de saída precoce)
	Dinâmica Cultural	Sessões de espectáculos culturais Visitantes de museus Visitantes de bibliotecas de acesso ao público
	Participação Cívica	Votantes que exerceram o direito de voto nos últimos quatro actos eleitorais Mulheres eleitas para órgãos municipais Associações desportivas por 1000 habitantes Associações culturais e recreativas por 1000 habitantes Voluntários regulares
	Saúde	Taxa de mortalidade precoce
	Segurança	Acidentes de viação com mortos ou feridos graves por 1000 habitantes Taxa de criminalidade
	Problemas Sociais	Suicídios por 1000 habitantes Utentes activos dos CAT Pedidos para habitação social Sem abrigo

APPENDIX IX

Sustainability Indicator System of Mora

Table IX.1 - Monitoring and Measurement Plan 2006

Área	Processo	Indicador
Segurança (13 Indicadores)	Sistema de Gestão de Higiene e Segurança no Trabalho	% de não conformidades de segurança
		% de observações de segurança
		% de acções correctivas/preventivas eficazes de segurança
	Absentismo	Taxa de absentismo por sectores
	Acidentes	N.º de acidentes por mês e total anual
		% de acidentes por tipo de consequência
		% de acidentes por sectores de trabalho
		% de tipo de acidente
	Doenças Profissionais	N.º de casos de doenças profissionais anual
	Trabalhadores expostos ao ruído	% de trabalhadores expostos a ruído
	Situações de Emergência	N.º de situações de emergência/ano
	Iluminância	% de medições de lux correctos
	Exposição de Trabalhadores a agentes químicos e partículas respiráveis	% de trabalhadores expostos a agentes químicos e partículas respiráveis
Ambiente (22 Indicadores)	Sistema de Gestão Ambiental	% de não conformidades de gestão ambiental
		% de observações de ambiente
		% de acções correctivas/preventivas de ambiente eficazes
	Ruído	% de zonas sensíveis e mistas em PDM
	Águas de Abastecimento	% de análises com valores acima dos valores paramétricos legislados
	Águas Residuais	% de análises com valores acima dos VLE definidos
		% de redução dos parâmetros
	Emissões Atmosféricas	Poluentes atmosféricos associados à combustão da caldeira da piscina
	Consumo de Gás	m^3 de gás natural/horas de funcionamento da caldeira da piscina
	Resíduos	Quantidade e tipo de resíduos produzidos pelos serviços da CMM
		% de população servida com recolha de resíduos urbanos e recolha selectiva
	Rede de Águas e Saneamento	% de população abastecida com água potável
		% de população servida com saneamento básico e águas residuais tratadas
	Iluminação	Consumo específico de energia por habitante, kw/hab./ano
		% de vias públicas iluminadas
	Zonas verdes ou ajardinadas	Área de zonas verdes e ajardinadas
	Consumo de Água	m^3 de água captada (contadores dos furos)/habitante
	Consumo de Gasolina e Gasóleo	L/100 km percorridos pelas viaturas
	Consumo de Gás de Garrafa	m^3 de gás de garrafa consumidos
	Consumo de Inertes	Consumo de areia e brita (ton)/volume de obras realizadas (M€)
	Consumo de Oxigénio Engarrafado	m^3 de oxigénio engarrafado consumido
	Perda de Água na Rede de Distribuição	% de água captada/água utilizada

Table IX.2 - Strategic Indicator Map of the Mora Local Council 2010

Processo/Área	Indicador
Águas de Consumo	Volume de água captada Volume de água consumida Incumprimentos de parâmetros de análise Perdas e Fugas no sistema
Águas Residuais	Ligações a sistema de colectores municipais Incumprimentos de parâmetros de análise Tratamento de águas residuais - ETAR Mora Tratamento de águas residuais - ETAR do Fluviário Tratamento de águas residuais - ETAR Brotas Tratamento de águas residuais - ETAR Pavia Tratamento de águas residuais - ETAR Cabeção
Higiene e Limpeza	Satisfação dos municipes Resíduos sólidos recolhidos Resíduos líquidos recolhidos
Obras Particulares	Prazo de resposta
Obras Municipais por Administração Directa	Prazo de execução Tempo de execução Cumprimento de orçamento
Obras por Empreitada	Prazo de execução Cumprimento de orçamento
Transportes e Parque de Máquinas	Utilização de viaturas de transporte Operacionalidade
Recursos Humanos	Nº de trabalhadores (Tempo indeterminado, Termo incerto, Termo certo, Estágios, etc) Estrutura habilitacional dos trabalhadores Ausência do trabalho Encargos com pessoal Tempo em formação Taxa de frequência de acidentes Taxa de gravidade de acidentes Taxa de incidência de acidentes (total e mortal) Avaliação final SIADAP - Média das unidades orgânicas avaliadas (Eficiência, Eficácia, Qualidade) Avaliação final SIADAP - Média dos trabalhadores avaliados (Eficiência, Eficácia, Qualidade)
Águas e Esgotos (Administrativo)	Prazo de execução
Taxas e Licenças	Receita Cobrança
Aprovisionamento	Avaliação Média de Fornecedores (Investimento) Avaliação Média de Fornecedores (Geral) Prazo de pagamentos (Empreitadas e Outros)
Actividade Desportiva	N.º de actividades (Regulares e Eventos) N.º de pessoas que participaram em actividades (Regulares e Eventos) Satisfação dos municipes que participaram em actividades Taxa de participação Incumprimentos de parâmetros de análise de água da piscina
Actividade Cultural e Sócio-Recreativa	N.º de actividades (Regulares e Eventos) N.º de pessoas que participaram em actividades (Regulares e Eventos) Taxa de participação Satisfação dos municipes que participaram em actividades
Acção Social	N.º de actividades (Acção Social e Educação) N.º de pessoas que participaram em actividades (Sociais e Educação) Satisfação dos municipes que participaram em actividades

APPENDIX X

Sustainability Indicator System of Palmela

Table X - Sustainability Indicator System of Palmela

Área temática	Subárea temática	Designação do Indicador
Coesão Social (14 Indicadores)	Coesão Social	Percentagem de população imigrante, segundo a nacionalidade Percentagem de População que usufrui do Rendimento Social de Inserção Taxa de desemprego de longa duração, por sexo Taxa de desemprego, por sexo Proporção de novas autorizações de residência permanentes de estrangeiros N.º de crianças e jovens assinalados em situação de risco, por tipo de risco
	Participação e Cidadania	N.º de organizações do 3º sector N.º de acções de promoção da cidadania, sensibilização ambiental e educação para a saúde promovidas Taxa de participação em actos eleitorais locais
	Património, Cultura e Identidade	N.º de associados em associações locais Nº de elementos patrimoniais por tipo (classe) e classificação Nº de visitantes a lugares e imóveis com interesse patrimonial e arqueológico N.º de espectáculos, por tipo Percentagem de edifícios do Centro Histórico de Palmela segundo o estado de conservação
Equipamentos Colectivos (20 Indicadores)	Planeamento e Programação	N.º de documentos existentes nas bibliotecas por habitante Nº de documentos das bibliotecas consultados por habitante N.º de espectadores segundo o tipo de espectáculo Superfície útil dos Espaços de Jogo e Recreio por 1000 habitantes Nº de equipamentos de bombeiros Nº de postos de agentes de Segurança Pública Taxa líquida de escolarização N.º de vezes que os utilizadores de bibliotecas efectuaram empréstimo, por 1000 habitantes Taxa de pré-escolarização Nº de Equipamentos de Acção Social, segundo a natureza jurídica da instituição Nº de farmácias por 1000 habitantes Nº médio de utentes de centros e extensões de saúde N.º de utentes de bibliotecas, museus e salas de espectáculo por tipo de equipamento Nº de valências de acção social por tipo N.º de lugares em salas de espectáculo por 1000 habitantes
	Qualidade da Rede de Equipamentos	N.º de atletas federados Percentagem de praticantes por modalidade desportiva Percentagem de população inscrita no Centro e extensões de Saúde, com e sem médico de família Nº de médicos ao serviço no Centros de Saúde e Extensões por 1000 habitantes Superficie desportiva útil por habitante
Estrutura Económica (20 Indicadores)	Acessibilidades	Densidade rodoviária, por tipo de via (por 1000 km2)
	Dinamismo	Taxa de Crescimento das sociedades segundo o escalão de pessoal ao serviço Taxa de sociedades constituídas por ramo de actividade Taxa de crescimento das sociedades, segundo o escalão de volume de negócios
	Diversificação	Coeficiente de Especialização do tecido económico
	Emprego	Quociente de localização do emprego Índice de diversificação Social Índice de polarização de emprego
	Especificidades Locais	Volume de vendas do sector vitivinícola com Denominação de Origem Controlada Área de vinha com aptidão para a produção de vinho com Denominação de Origem Controlada N.º de Queijarias certificadas com Denominação de Origem Protegida
	Ordenamento da Actividade	Percentagem da área industrial abrangida por Loteamentos ou Planos de Pormenor Percentagem de ocupação dos espaços industriais
	Promoção do Turismo	Tempo permanência, por tipo de estabelecimento Dormidas, segundo a proveniência dos turistas Taxa de variação do n.º de camas N.º de hóspedes, por tipo de estabelecimento Evolução das Receitas na Hotelaria N.º de empreendimentos turísticos
	Valor	Taxa de Cobertura
Gestão e Administração Municipal (7 Indicadores)	Formação de Recursos Humanos	N.º médio de horas de formação por trabalhador municipal N.º de trabalhadores municipais que participam em pelo menos 2 acções de formação
	Qualidade e Eficácia da Gestão	Percentagem de secções cadastrais actualizadas Grau de satisfação dos munícipes em relação à gestão municipal Percentagem de Indicadores de Monitorização Actualizados Taxa Anual de Execução financeira do Plano de Actividades Tempo médio de fornecimento de certidões, por tipo

Table X - Sustainability Indicator System of Palmela (Cont.)

Área temática	Subárea temática	Designação do Indicador
Planeamento e Ordenamento do Território (40 Indicadores)	Dinâmica Construtiva	Percentagem de novos fogos licenciados nos perímetros urbanos Percentagem de novos fogos licenciados fora dos perímetros urbanos
	Gestão Sustentável	Número de certificações ambientais atribuídas às empresas
	Habitação	N.º de agregados familiares abrangidos por programas de habitação social Proporção de alojamentos familiares sem pelo menos uma das instalações básicas Percentagem de barracas Densidade habitacional (por hectare)
	Impermeabilização do Solo	Percentagem de impermeabilização do solo em áreas urbanas
	Mobilidade Local e Transportes	Extensão de ciclovias e ecopistas População que se desloca para trabalhar ou estudar, segundo a duração da viagem Percentagem de viagens com origem em Palmela, por classe de distância percorrida Taxa de motorização Percentagem de pessoas que se deslocam, segundo o modo de transporte
	Ocupação Turística	Taxa de Preenchimento dos Espaços de Ocupação Turística Taxa de afectação ao espaço de ocupação turística
	Ocupação Urbana Planeada	Percentagem das áreas de expansão abrangidas por plano de pormenor
	Participação Pública	Nº de iniciativas municipais de informação e de sensibilização pública relacionadas com o ordenamento do território
	Qualidade do Espaço Urbano	Capitação de espaço exterior público nas áreas urbanas Extensão de arruamentos para utilização pedonal em áreas centrais nos principais aglomerados Percentagem de área ocupada por espaços verdes urbanos públicos Área de construção para serviços comerciais licenciada nos perímetros urbanos Percentagem de postos de trabalho existentes, por ramo de actividade Capitação de espaços verdes urbanos públicos em adequado estado de utilização Diversidade da estrutura económica nos perímetros urbanos da rede principal Proporção de edifícios muito degradados Percentagem de equipamentos municipais sem barreiras arquitectónicas Percentagem de edifícios residenciais acessíveis a pessoas com mobilidade condicionada Percentagem de fogos vagos
	Ritmo de Urbanização	Percentagem de Área Urbanizada Nível de execução dos espaços urbanizáveis habitacionais (fogos) Nível de infra-estruturação das áreas urbanizáveis Nível de execução dos espaços urbanizáveis (área)
	Segurança de Pessoas e Bens	Taxa de variação das ocorrências de emergência e socorro, por tipo
	Segurança Rodoviária	N.º de acidentes rodoviários, segundo o tipo de danos
	Sinistralidade de Peões	Nº de acidentes rodoviários com atropelamentos
	Sistema de Centros Urbanos	Grau de Centralidade dos Núcleos Urbanos Distribuição dos perímetros urbanos por classe de dimensão populacional
	Uso Sustentável do Solo	Percentagem de solo ocupado por áreas classificadas Percentagem da superfície artificial do solo municipal Densidade populacional em áreas urbanizadas (por Km2)
População e Ambiente (27 Indicadores)	Água	Qualidade da água para consumo humano (% de análises em falta)
	Arborização	Árvores de rua por 100 habitantes Área afectada por fogos, segundo o tipo de área Extensão de arruamentos urbanos arborizados
	Biodiversidade e Paisagem	Risco de inundação associado ao estado de conservação das linhas de água
	Estrutura Demográfica e Saúde	Esperança de vida à nascença Percentagem de pensionistas activos por tipo de pensão Taxa de actividade Índice de longevidade (n.º idosos com 75 ou + anos por 100 idosos) Índice de envelhecimento (nº idosos por 100 jovens) Índice de dependência de jovens (nº jovens por 100 activos) Taxa de mortalidade infantil (nº óbitos com menos 1 ano por 1000 nados vivos) Índice de dependência total (Nº idosos e jovens por 100 activos) Taxa de mortalidade (n.º obitos por 1000 habitantes) Taxa de fecundidade (n.º nados vivos por 1000 mulheres em idade fecunda) Taxa de natalidade (n.º nados vivos por 1000 habitantes) Índice de dependência de idosos (nº idosos por 100 activos) Taxa de mortalidade precoce (nº óbitos com menos 65 anos por 1000 óbitos) Índice de Rejuvenescimento da População Activa Taxa de incidência de deficiência (n.º indivíduos portadores deficiência por 1000 hab)
	Ruído	Percentagem de população residente em áreas ruidosas
	Salubridade	Volume de resíduos sólidos urbanos recolhidos para reciclagem per capita Proporção de edifícios com recolha selectiva de resíduos sólidos urbanos Percentagem de população não colectada à rede pública de águas residuais Percentagem de edifícios abrangidos pela recolha de resíduos sólidos urbanos Percentagem de alojamentos com ligação à rede pública de abastecimento de água Tratamento e destino final por tipo de resíduos